Transportation Economics Demographics

2003 Baseline Scenario

The 2003 Baseline Scenario for the Greater Wasatch Area of Utah provides a projection to the year 2030 based on current trends and policies. The 2003 Baseline follows and is informed by the 1997 Baseline, the 1998 Growth Scenarios Analysis, and the 1999 Quality Growth Strategy. Envision Utah hosted dozens of citizen workshops to frame the Scenarios Analysis and craft the Quality Growth Strategy. The analysis and development of baselines and growth strategies will continue as long as growth is a concern to the citizens of the Greater Wasatch.

Prepared by

QGET
Quality Growth Efficiency Tools
Work Group

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Air Quality Water Land Use

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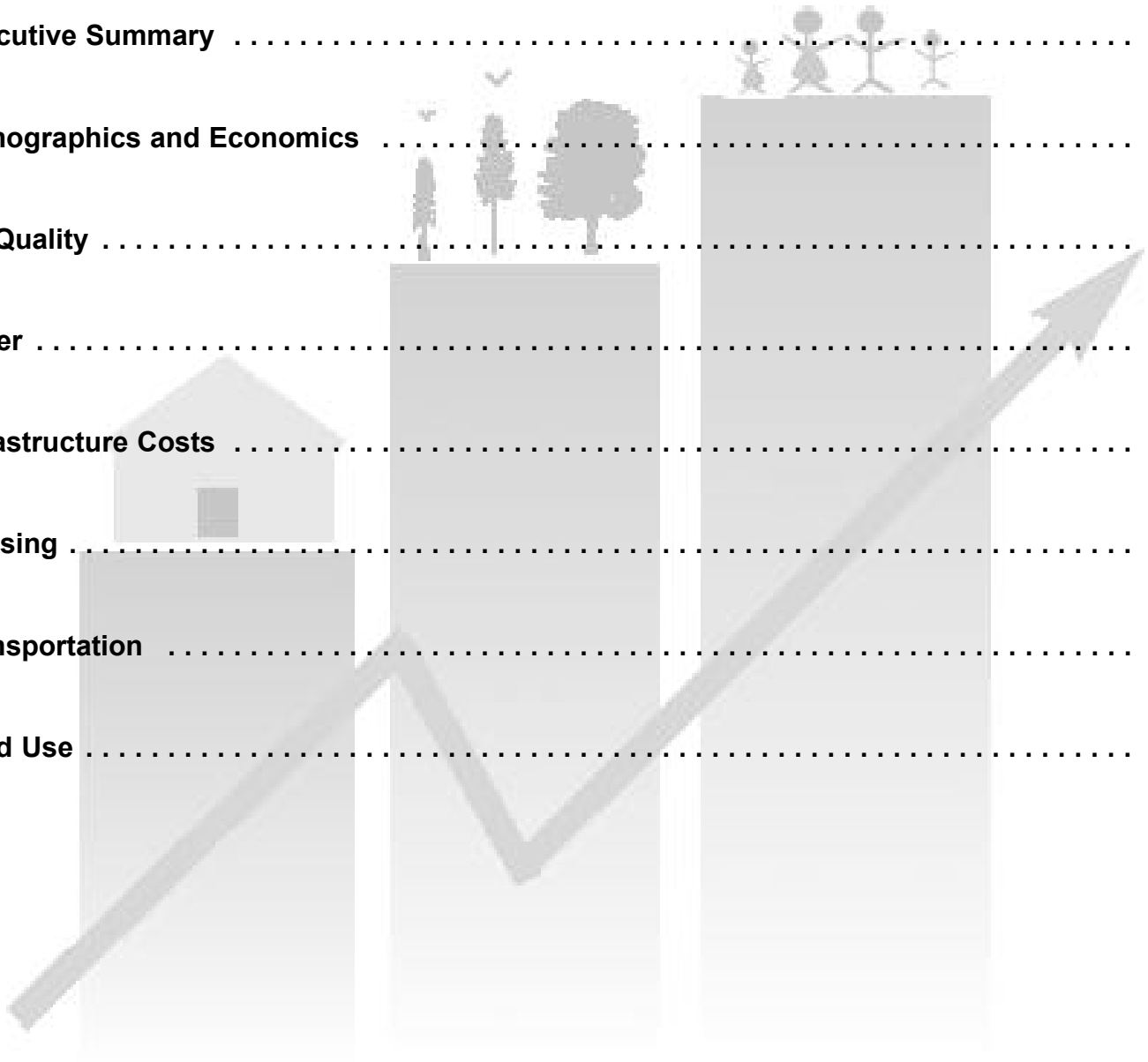

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Contributors

This most recent growth analysis effort, the 2003 Baseline Growth Scenario, builds on and is informed by the previous work of elected officials and technical analysts from over 40 cities, counties, special districts, associations of government, state agencies, private organizations, as well as interested citizens. A large group of people from these governments and organizations was selected to form the Quality Growth Efficiency Tools (QGET) Technical Committee, which guided the previous analysis.

The 2003 Baseline was developed by a core set of individuals from the Technical Committee, known as the QGET Work Group. The QGET Work Group includes contributors from:

Envision Utah
http://www.envisionutah.org

Mountainland Association of Governments
http://www.mountainland.org

University of Utah Bureau of Economic and Business Research
http://www.business.utah.edu/BEBR

Utah Automated Geographic Reference Center
http://agrc.its.state.ut.us

Utah Division of Air Quality
http://www.airquality.utah.gov

Utah Division of Water Quality
http://www.waterquality.utah.gov

Utah Division of Water Resources
http://www.water.utah.gov

Utah Governor's Office of Planning and Budget
http://governor.utah.gov/gopb

Utah Transit Authority
http://www.rideuta.com

Wasatch Front Regional Council
http://www.wfrc.org

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Executive Summary

The Greater Wasatch Area includes a 10-county region along the front and back of the Wasatch Mountain Range and can reasonably be considered the commutershed for the Salt Lake-Ogden and Provo-Orem metropolitan areas. The area includes 10 counties, about 100 cities and 160 special service districts. These multiple jurisdictions, along with state government and the Utah Transit Authority, share responsibility for providing infrastructure and services to two million people. The steady and rapid population growth within the region places increasing demands on these entities. The growth also places a strain on the environment because of the unique geographical layout of the area, which is bounded by mountain ranges and water bodies and includes land that is essentially arid.

The Quality Growth Efficiency Tools (QGET) Work Group, whose mission it is to improve the quality of information available about Utah's future, has authored this baseline to provide a comprehensive depiction of what current projections indicate regarding the demographic, economic, air quality, water, transportation, and land use future of the Greater Wasatch.

The 2003 Baseline Growth Scenario for the Greater Wasatch provides a projection to the year 2030 based on current trends and policies. The 2003 Baseline follows and is informed by the 1997 Baseline, the 1998 Growth Scenarios Analysis, and the 1999 Quality Growth Strategy. Envision Utah hosted dozens of citizen workshops to frame the Scenarios Analysis and craft the Quality Growth Strategy. The analysis and development of baselines and growth strategies will continue as long as growth is a concern to the citizens of the Greater Wasatch.

Demographics and Economics

The Greater Wasatch is projected to increase from 1.9 million people in 2000 (a population slightly larger than the Sacramento metro area) to 3.1 million by 2030 (a population slightly smaller than the current Phoenix metro area).

The 2003 Baseline population is projected to exceed the 1997 Baseline by an average of 80,000, or 4%, in each of the years from 2000 to 2020. All of the difference is accounted for by the undercount of population during the 1990s. Rapid population growth with an especially strong migration component lead to an under projection in the 2000 population of almost 80,000 people. The 1997 Baseline projected a 2000 population of 1.78 million, whereas the actual population was 1.86 million. Projected growth in population is about the same between the two baselines, though the 1997 Baseline had slightly higher migration while the 2003 Baseline has slightly higher internal growth.

The projections to 2030 indicate a population growth rate approximately twice the national average. Two-thirds of the new growth is projected to originate from residents' own children and grandchildren. The population is projected to increase by an average of 42,000 residents a year, a population about the current size of Logan. Throughout the projection period, the economy is projected to create enough jobs for residents.

Air Quality

In sharp contrast to the 1997 Baseline, during the next three decades emissions of all five of the major monitored pollutants are not projected to increase. Because of more stringent federal standards for auto emissions and better controls on industrial sources, the air is expected to improve somewhat over the next two decades. During the 2020s, however, projected population growth is expected to outweigh auto and industrial controls, so that, without technical or regulatory changes, air quality returns to its present state by 2030. Federal air standards should be attained throughout the period to 2030, and air quality should not be a constraint to growth.

Water

Water is not a constraint to growth in the Greater Wasatch as long as residents are willing to pay for additional water development and water providers are willing to work together to deliver adequate supplies. Residents are expected to decrease per capita water consumption because of a continuation of current trends in the use of low flow plumbing, xeriscaping, and rate increases. Reflecting the difficulty of developing new supplies, water rates, after adjusting for inflation, are projected to more than double between 2000 and 2030.

Water infrastructure development is projected to cost almost $8 billion between 2000 and 2030 (2003 dollars). This is $2,500 per person and $7,200 per household.

Infrastructure Costs

Infrastructure spending between 2000 and 2030 is projected to be $28.9 billion (2003 dollars); $21.0 billion for transportation and $7.9 billion for water. After peaking over $1 billion in 2000 during the height of I-15 reconstruction in Salt Lake County, total spending infrastructure spending is not projected to exceed $1

billion until 2019. The estimated timing of spending is based on funding availability and need. If several large projects are undertaken at once with bond financing, total spending in any given year could exceed $2 billion. As a percent of Greater Wasatch gross domestic product (GDP), GOPB forecasts infrastructure spending to decline from a peak above 1.6% during 2000, to a range of 0.6% during the 2020s. Spending averages 0.8% of GDP from 2000 to 2030. If GDP grows as forecast, the Greater Wasatch will be able to finance planned infrastructure over the next three decades. With less federal participation, the effort required from residents may be somewhat higher than in the past.

Housing

Housing construction is driven by new household formation. The number of households is projected to increase 90% from 2000 to 2030, a faster rate of increase than for population. Following household growth, the housing stock is projected to increase from 621,000 units to 1.2 million. In other words, almost 600,000 new housing units will be constructed, an average of almost 20,000 per year. Over the next three decades, housing prices should increase somewhat more than the historical long-term trend of 4.5% annually. This higher rate of increase results from the growing scarcity of developable land in Salt Lake County.

Transportation

Vehicle miles traveled in the Greater Wasatch Area is projected to increase at a faster rate than population. This is projected to occur as residents continue to increase vehicle ownership, drive farther for work trips, and make more non-work trips. Relative to the 1997 Baseline, 2003 Baseline transportation investment has increased substantially, especially for transit. Because of this increased investment, and refinements to travel modeling techniques, the transportation system is projected to perform better in the 2003 Baseline than was the case in the 1997 Baseline.

Over the entire highway network during peak commute times, the current delay averages about two minutes. Of course, many people who use congested facilities experience more delay than two minutes. The average delay is expected to double by 2030 to over four minutes. Average commute speed is expected to drop from about 31 mph now to 28 mph in 2030, while the average time commuting increases from 22 minutes to 24 minutes. One of the major benefits of the massive transit investments that are planned is that people can choose not to drive during peak congestion, which allows the highway network to perform relatively well. Transit share of work trips increases from 3.6% in 2000 to 6.5% in 2030.

Transportation infrastructure investment is projected to exceed $20 billion (2003 dollars) between 2000 and 2030. This is $6,700 per person and $19,000 per household in the year 2030.

Land Use

Population growth will change land use patterns as new homes and businesses are built. The current urban area occupies an estimated 389 square miles of land and is projected to increase to 615 square miles in 2020 and 697 square miles in 2030. Agricultural and other land uses will be converted to resident use as the demand for new housing continues to increase. Reflecting the current trend of lower density home construction, population density in the urban area will decline from 4,771 people per square mile in 2000 to 4,484 in 2030. Nonetheless, while the 1997 Baseline forecast an urban area of 695 square miles by 2020, the urban area in the 2003 Baseline is not forecast to reach 695 square miles until 2030. Policy changes since the 1997 Baseline, which include a massive expansion in the transit system, more transit oriented development, and aggressive conservation of critical lands, are expected to slow the pace of land consumption by a decade.

Summary Baseline Statistics for the Greater Wasatch Area

Davis, Salt Lake, Utah, Weber, Box Elder, Juab, Morgan, Summit, Tooele and Wasatch Counties

	2000	2010	2020	2030	Average Annual Change 2000 to 2030 Level	Rate
Demographics						
Population	1,857,797	2,307,842	2,786,280	3,124,353	42,219	1.7%
Annual Population Change	46,200	61,327	33,733	33,811	-413	-1.0%
Net Migration	16,334	26,993	-1,230	-2,607	-631	
Natural Increase	29,866	34,336	34,963	36,418	218	0.7%
Births	39,319	46,289	49,865	55,731	547	1.2%
Deaths	9,453	11,953	14,902	19,313	329	2.4%
Households	580,927	756,530	946,578	1,098,578	17,255	2.1%
Persons Per Household	3.14	3.00	2.90	2.80	-0.01	-0.4%
% of Population 0 through 17 Years	31.9%	31.6%	31.1%	29.2%	-0.1%	-0.3%
% of Population 18 through 64 Years	59.6%	60.3%	58.4%	57.5%	-0.1%	-0.1%
% of Population 65 Years and Over	7.8%	8.1%	10.5%	13.3%	0.2%	1.8%
Median Age	27.0	29.0	31.0	32.0	0.2	0.6%
Economics						
Total Employment	1,134,601	1,405,382	1,670,889	1,854,398	23,993	1.7%
Population to Jobs Ratio	1.64	1.64	1.67	1.68	0.00	0.1%
Air Quality						
Particulate Matter (tons per day)	102	116	131	143	1.3	1.1%
Sulfur Oxides (tons per day)	33	34	38	38	0.1	0.4%
Nitrogen Oxides (tons per day)	270	212	179	178	-3.1	-1.4%
Volatile Organic Compounds (tons per day)	479	463	483	509	1.0	0.2%
Carbon Monoxide (tons per day)	1,691	1,420	1,434	1,631	-2.0	-0.1%
Total Emissions (tons per day)	2,576	2,244	2,265	2,499	-2.6	-0.1%
Water						
Demand (Acre-feet)	659,300	794,300	881,400	954,900	9,853	1.2%
Supply (Acre-feet)	852,600	925,800	1,040,700	1,040,700	6,270	0.7%
Per Capita Use (gcpd)	283	280	260	254	-1.0	-0.4%
Price (2003 dollars per 1,000 gallons)	1.18	1.68	2.32	2.73	0.1	2.8%
Housing						
Housing Units	620,752	810,164	1,015,496	1,180,223	18,649	2.2%
Land Use						
Urban Area (square miles)	389	507	615	697	10	2.0%
Population Per Square Mile	4,771	4,555	4,530	4,484	-10	-0.2%
Transportation						
Average Weekday VMT (millions)	48.9	62.3	79.0	92.8	1.46	2.2%
VMT Per Capita	26.3	27.0	28.3	29.7	0.11	0.4%
Average Peak Period Trip Time (minutes)	21.8	22.5	23.6	24.0	0.07	0.3%
Average Peak Period Speed (mph)	31.1	30.6	28.6	28.5	-0.08	-0.3%
Peak Period Delay Per Trip (minutes)	2.1	2.3	3.3	4.4	0.08	2.6%
Vehicles Per Capita	0.58	0.69	0.67	0.67	0.00	0.5%
Transit Passengers (millions)	28.2	42.5	56.1	69.6	1.38	3.1%
Transit Share of All Trips	1.2%	1.4%	1.6%	1.8%	0.02%	1.4%
Transit Share of Work Trips	3.6%	4.9%	5.8%	6.5%	0.10%	2.0%
Infrastructure Costs						
Transportation (millions of 2003 dollars)	758.3	580.1	775.7	1,060.5	10.1	1.1%
Water (millions of 2003 dollars)	284.8	320.2	310.0	250.4	-1.1	-0.4%
Total (millions of 2003 dollars)	1,043.1	900.3	1,085.7	1,310.9	8.9	0.8%

Note: Sources cited in corresponding chapters.

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Demographics and Economics

The central assumptions, data, projects, and constraints contained in the 2003 Baseline originate from key planning documents that are broad in scope, but encompass the most important features of more detailed plans prepared by city, county, and state entities. For presentation purposes, the baseline is presented by subject area with a brief description of the most important points in three areas: (1) sources and assumptions, (2) characteristics and trends, and (3) major issues and findings.

Source and Assumptions

The Governor's Office of Planning and Budget produces long-term population, employment, and household projections for Utah's counties. These projections assist in the planning processes of state government, local government, and private entities. The fundamental logic of the modeling process follows the general points listed below. These points are followed by the main assumptions.

Logic

- Changes in the size and composition of a region's population depend upon: (1) the size and demographic characteristics of the initial population, (2) the annual number of births, (3) the annual number of deaths, and (4) the number and characteristics of persons moving into and out of the region.

- Migration into or out of a region occurs because of employment opportunities or other factors such as the desire to attend school, serve a religious mission, retire, or accompany other members of a household who are migrating for any of these or other reasons. Employment related migration is a function of the number and types of jobs created in the region and the availability of local labor supply to fill these jobs. In-migration occurs when there are not enough people in the labor force to fill all of the jobs. Out-migration occurs when there are not enough jobs to support the population.

Assumptions

- Fertility rates (a calculation of age-specific birth rates) are projected to remain constant at 2.6 children per woman of childbearing age. Fertility rates for both Utah and the nation have fallen since the 1960s, but have been relatively stable for many years. Utah is expected to continue to have among the highest fertility rates in the nation.

- Survival rates are assumed to increase along with projected U.S. survival rates to 2030. Life expectancy in Utah and the nation has increased over the past three decades; this trend is expected to continue in the future, although at a lower rate. Utahns are expected to continue to live longer than their national counterparts.

- Utah labor force participation rates are assumed to trend with projected U.S. rates to 2020, except where U.S. rates are projected to fall. In effect, this assumes little or no change in Utah male participation rates and increases in middle and old age female rates. After 2020, labor force participation rates are assumed to remain constant at their 2020 levels.

- Utah's economy is projected to continue to grow more rapidly than that of the nation and its industrial structure is assumed to continue to diversify. These assumptions are based on analysis of historic trends, national projections, and local technical input on 66 detailed industries. For the long-term, 2000 to 2030, basic employment growth is based on a demographic assumption, but is consistent with a conservative mid-range growth assumption based upon alternative growth analysis.

Characteristics and Trends

The Greater Wasatch Area currently includes approximately 1.86 million people, which is slightly larger than the Sacramento metropolitan area. By the year 2030, this population is projected to increase to 3.12 million, an increase of approximately 1.8% per year, slightly smaller than the current size of the Phoenix metropolitan area. This annual rate of population increase is approximately twice the national average. Based on these projections, the population will increase by an average of 42,300 people per year, a population approximately the size of the city of Logan. Natural increase is projected to account for 80% of the new growth, and net in-migration will average approximately 8,200 people per year.

The average age of the population in the Greater Wasatch Area, like that of the nation, will continue to increase as the baby boom generation moves into older age groups. The median age in the 10-county area is projected to rise from 27 in 2000 to 32 in 2030. Even with this increase in the median age, the Greater Wasatch Area will still have a population significantly younger than the national average. By 2030, 29% of the population is projected to be under age 18, compared to

32% in 2000. The percent of the population 65 years of age and older is projected to increase from 8% in 2000 to 13% in 2030.

The number of households in the Greater Wasatch Area is projected to increase from 580,927 in 2000 to 1,098,578 in 2030, an average increase of 2.2% or 17,300 households per year. This is slightly faster than the corresponding population growth rate.

Total jobs in the Greater Wasatch Area are projected to increase from 1.1 million in 2000 to 1.9 million in 2030. This represents an average annual increase of 1.7% per year compared to a rate of 1.0% for the national average. The service industry is projected to increase at a faster average rate than any other major industry. The Agriculture and Mining industries are projected to lose jobs over the 30 year period.

Major Issues and Findings

The anticipated changes in the population and economy of the Greater Wasatch Area introduce several major issues and findings that are relevant to an understanding of the baseline and the development of alternative scenarios. These include the following:

- The population in the Greater Wasatch Area is projected to increase from 1.86 million, a population slightly larger than the Sacramento metropolitan area, to 3.12 million, a population slightly smaller than the current size of the Phoenix metropolitan area.

- The demographic and economic projections in the 2003 QGET Baseline are different from the 1997 Baseline. The release of decennial census population data accounts for much of the difference. The 2000 Census revealed an underestimation in population during the 1990s and the state's population has been raised to reflect the corrected Census count. The 1997 Baseline projected a Greater Wasatch Area population of 1.78 million. The corrected population, which reflects 2000 Census revisions, is 1.86 million, a difference of 78,000 persons. The projected series shows a similar increase in population. The 1997 Baseline projected the Greater Wasatch Area to have a population of 2.70 million in 2020. The 2003 Baseline now projects a 2020 population of 2.79 million, which is 91,000 persons higher than the previous baseline.

- While the overall population is projected to be higher in the 2003 Baseline, the demographic and economic components of population change are projected to be lower than in the 1997 Baseline. The overall effect is that the average annual projected population growth amount in the Greater Wasatch Area is 700 persons lower in the 2003 Baseline than in the 1997 Baseline.

- The current and projected rates of population growth, which are approximately twice the national average, are not unprecedented in terms of Utah's recent history, nor unique among the Intermountain states. The Greater Wasatch Area's historical rate of population growth from 1970 to 2000 averaged 2.5% per year. The projected rate for the same area from 2000 to 2030 is 1.7%. The Intermountain states, over the same historic period, grew at 2.6% per year and are projected by the Bureau of the Census to increase at a lower rate through 2020.

- The primary reason for the Greater Wasatch Area's rapid and stable population growth is the many large families in the state. Utah has a relatively young population and therefore a disproportionately large share of women in childbearing years. In addition, Utah's fertility rate of 2.6 children per woman is the highest in the nation; the national rate is 2.1 children per woman. These two factors result in a relatively large number of births.

- Utah's tendency toward large families and healthy lifestyles result in a high rate of indigenous population growth. During the 30-year period, approximately 80% of the population growth in the Greater Wasatch Area is projected to originate from residents' own children. Residents in the Greater Wasatch Area have higher life expectancies than their national counterparts. When combined with higher survival rates and a younger population, this results in a relatively smaller number of deaths per capita.

- The Greater Wasatch Area will average approximately 42,300 new residents a year between now and 2030. This is an annual population growth of roughly the current size of Logan. These new residents will require government services and infrastructure. They will also increase the levels of congestion and place tremendous pressures on open space, farmlands, and air quality.

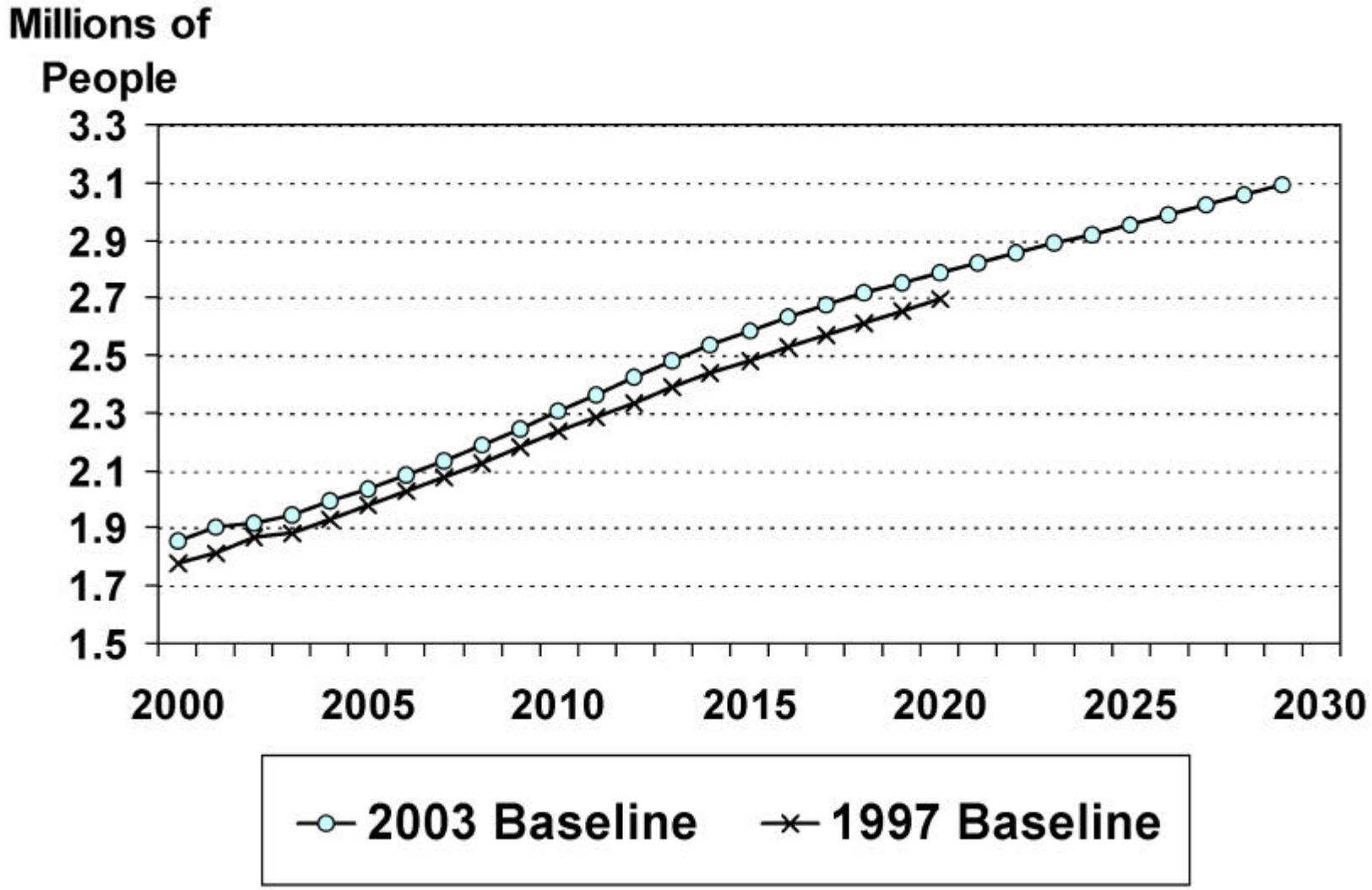
- According to the 2003 Baseline, homes and apartments for approximately 17,300 new households will need to be built and converted every year. This compares to a 1997 Baseline projection of 17,400 new households per year in the long term.

- In a society where people have the constitutional right to move freely among states, in and out migration is a given. It has never been the goal of the state to have net in-migration, but leaders have tried to foster an economy that provides economic opportunity to current and future residents. Attempts to limit in-migration by restricting economic development opportunities are likely to negatively impact economic prospects for current residents.

- The economy in the Greater Wasatch Area is projected to remain strong during the projections period. This is based on analysis of historic trends, national projections, and local technical input on more than 60 industries. Job growth is projected to be sufficient to provide for Utah's rapidly growing labor force and will even attract in-migrants for much of the projections period. Net in-migration is projected to average 8,200 new residents per year. This projection is approximately 4,800 lower than in the 1997 Baseline.

Population

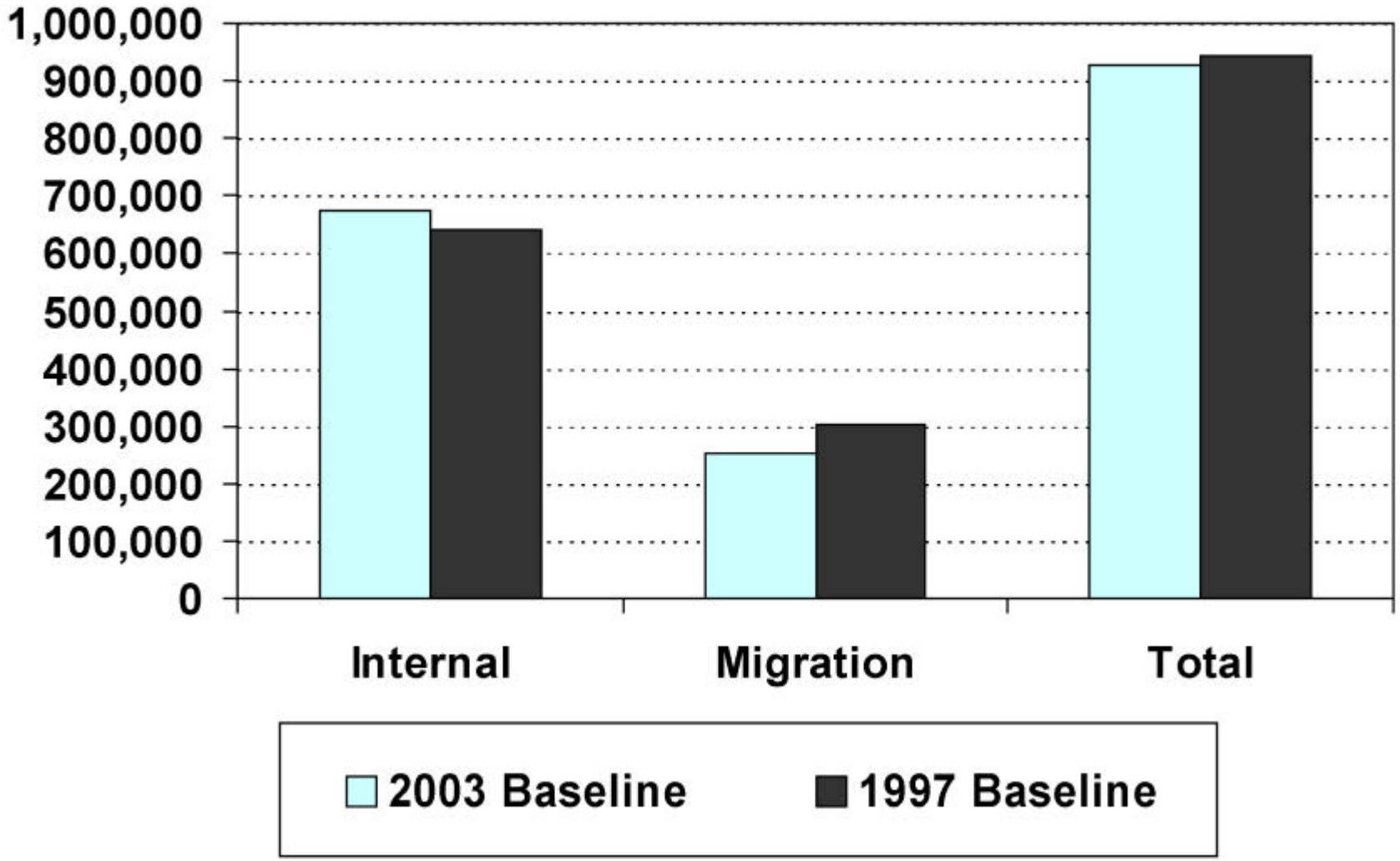
Greater Wasatch Area



Source: Governor's Office of Planning and Budget

Population Growth

Greater Wasatch Area



Source: Governor's Office of Planning and Budget

Population and Components of Population Change for the Greater Wasatch Area, 2000 to 2030

Davis, Salt Lake, Utah, Weber, Box Elder, Juab, Morgan, Summit, Tooele and Wasatch Counties

	Population		2003 Baseline									
Year	1997 Baseline	2003 Baseline	Percent Change	Numerical Change	Net Migration	Natural Increase	Births	Deaths	Households	Household Percent Change	Household Numerical Change	Persons Per Household
2000	1,779,653	1,857,797	2.55%	46,200	16,334	29,866	39,319	9,453	580,927	NA	NA	3.14
2001	1,814,948	1,900,146	2.28%	42,349	12,116	30,235	40,130	9,895	597,276	2.81%	16,349	3.13
2002	1,869,730	1,918,874	0.99%	18,728	(12,080)	30,804	41,297	10,493	606,249	1.50%	8,973	3.11
2003	1,884,736	1,945,571	1.39%	26,697	(4,237)	30,932	41,454	10,522	617,562	1.87%	11,313	3.10
2004	1,930,907	1,992,130	2.39%	46,559	15,373	31,188	41,802	10,614	635,277	2.87%	17,715	3.08
2005	1,978,319	2,036,991	2.25%	44,861	12,981	31,879	42,672	10,793	653,352	2.85%	18,075	3.07
2006	2,025,380	2,083,657	2.29%	46,666	14,190	32,475	43,451	10,976	673,011	3.01%	19,659	3.05
2007	2,074,203	2,134,130	2.42%	50,473	17,574	32,897	44,089	11,192	692,055	2.83%	19,044	3.03
2008	2,126,262	2,186,101	2.44%	51,971	18,612	33,359	44,797	11,438	711,929	2.87%	19,874	3.02
2009	2,180,279	2,246,515	2.76%	60,414	26,610	33,803	45,475	11,672	734,089	3.11%	22,160	3.01
2010	2,233,488	2,307,842	2.73%	61,327	26,993	34,336	46,289	11,953	756,530	3.06%	22,441	3.00
2011	2,283,506	2,364,846	2.47%	57,004	22,255	34,746	47,014	12,268	777,317	2.75%	20,787	2.99
2012	2,335,273	2,423,952	2.50%	59,106	24,101	35,008	47,550	12,542	799,103	2.80%	21,786	2.99
2013	2,387,200	2,480,860	2.35%	56,908	21,597	35,306	48,135	12,829	820,251	2.65%	21,148	2.98
2014	2,435,529	2,535,672	2.21%	54,812	19,306	35,506	48,618	13,112	841,005	2.53%	20,754	2.97
2015	2,482,455	2,587,089	2.03%	51,417	15,843	35,574	48,991	13,417	861,287	2.41%	20,282	2.96
2016	2,527,998	2,634,239	1.82%	47,150	11,589	35,565	49,289	13,724	881,143	2.31%	19,856	2.94
2017	2,570,538	2,677,521	1.64%	43,282	7,829	35,452	49,475	14,023	899,095	2.04%	17,952	2.93
2018	2,613,739	2,717,444	1.49%	39,923	4,614	35,307	49,622	14,315	916,181	1.90%	17,086	2.92
2019	2,654,792	2,752,547	1.29%	35,103	(60)	35,165	49,770	14,605	931,438	1.67%	15,257	2.91
2020	2,695,278	2,786,280	1.23%	33,733	(1,230)	34,963	49,865	14,902	946,578	1.63%	15,140	2.90
2021		2,821,242	1.25%	34,962	217	34,748	50,004	15,256	961,937	1.62%	15,359	2.89
2022		2,855,743	1.22%	34,501	(216)	34,717	50,335	15,618	977,346	1.60%	15,409	2.87
2023		2,889,232	1.17%	33,489	(1,289)	34,779	50,772	15,993	992,287	1.53%	14,941	2.86
2024		2,921,100	1.10%	31,868	(3,040)	34,910	51,302	16,392	1,006,928	1.48%	14,641	2.85
2025		2,954,725	1.15%	33,625	(1,423)	35,046	51,851	16,805	1,022,303	1.53%	15,375	2.84
2026		2,986,931	1.09%	32,206	(3,074)	35,280	52,534	17,254	1,037,781	1.51%	15,478	2.83
2027		3,020,513	1.12%	33,582	(1,938)	35,524	53,225	17,701	1,053,192	1.48%	15,411	2.82
2028		3,054,911	1.14%	34,398	(1,414)	35,812	54,008	18,196	1,068,597	1.46%	15,405	2.81
2029		3,090,542	1.17%	35,631	(461)	36,094	54,843	18,749	1,083,959	1.44%	15,362	2.80
2030		3,124,353	1.09%	33,811	(2,607)	36,418	55,731	19,313	1,098,578	1.35%	14,619	2.80
AARC	2.10%	1.75%	1.78%	42,347	8,228	34,119	47,862	13,742	2.15%	2.15%	17,255	2.95

Notes: AARC is Average Annual Rate of Change
Persons Per Household excludes the group quarters population
Parenthases signify a negative in-migration (i.e. out-migration)

Source: Governor's Office of Planning and Budget - UPED Model System

Selected Age Groups for the Greater Wasatch Area, 2000 to 2030

Davis, Salt Lake, Utah, Weber, Box Elder, Juab, Morgan, Summit, Tooele and Wasatch Counties

Year	0 through 17	% of Total	18 through 64	% of Total	65 and Over	% of Total	Total Population	Median Age
2000	593,526	31.9%	1,107,142	59.6%	145,580	7.8%	1,857,797	27.0
2001	604,421	31.8%	1,146,902	60.4%	148,823	7.8%	1,900,146	27.0
2002	607,552	31.7%	1,161,125	60.5%	150,197	7.8%	1,918,874	27.0
2003	614,663	31.6%	1,178,735	60.6%	152,173	7.8%	1,945,571	28.0
2004	628,069	31.5%	1,208,935	60.7%	155,126	7.8%	1,992,130	28.0
2005	642,428	31.5%	1,236,015	60.7%	158,548	7.8%	2,036,991	28.0
2006	657,720	31.6%	1,263,761	60.7%	162,176	7.8%	2,083,657	28.0
2007	674,099	31.6%	1,293,272	60.6%	166,759	7.8%	2,134,130	29.0
2008	690,677	31.6%	1,322,624	60.5%	172,800	7.9%	2,186,101	29.0
2009	709,307	31.6%	1,357,401	60.4%	179,807	8.0%	2,246,515	29.0
2010	729,009	31.6%	1,392,515	60.3%	186,318	8.1%	2,307,842	29.0
2011	747,832	31.6%	1,424,834	60.3%	192,180	8.1%	2,364,846	30.0
2012	767,722	31.7%	1,454,531	60.0%	201,699	8.3%	2,423,952	30.0
2013	786,069	31.7%	1,482,560	59.8%	212,231	8.6%	2,480,860	30.0
2014	803,726	31.7%	1,509,911	59.5%	222,035	8.8%	2,535,672	30.0
2015	819,835	31.7%	1,534,446	59.3%	232,808	9.0%	2,587,089	30.0
2016	834,690	31.7%	1,556,148	59.1%	243,401	9.2%	2,634,239	31.0
2017	846,704	31.6%	1,576,324	58.9%	254,493	9.5%	2,677,521	31.0
2018	856,760	31.5%	1,594,241	58.7%	266,443	9.8%	2,717,444	31.0
2019	862,924	31.4%	1,611,017	58.5%	278,606	10.1%	2,752,547	31.0
2020	867,766	31.1%	1,626,669	58.4%	291,845	10.5%	2,786,280	31.0
2021	872,587	30.9%	1,643,789	58.3%	304,866	10.8%	2,821,242	31.0
2022	876,989	30.7%	1,660,685	58.2%	318,069	11.1%	2,855,743	31.0
2023	880,804	30.5%	1,677,107	58.0%	331,321	11.5%	2,889,232	32.0
2024	884,050	30.3%	1,693,276	58.0%	343,774	11.8%	2,921,100	32.0
2025	887,881	30.0%	1,709,525	57.9%	357,319	12.1%	2,954,725	32.0
2026	891,597	29.8%	1,725,182	57.8%	370,152	12.4%	2,986,931	32.0
2027	896,017	29.7%	1,741,934	57.7%	382,562	12.7%	3,020,513	32.0
2028	901,050	29.5%	1,759,367	57.6%	394,494	12.9%	3,054,911	32.0
2029	906,931	29.3%	1,778,125	57.5%	405,486	13.1%	3,090,542	32.0
2030	913,022	29.2%	1,795,659	57.5%	415,672	13.3%	3,124,353	32.0

Note: Median Age is the age at which half of the population is of lesser age and half is of greater age.

Source: Governor's Office of Planning and Budget - UPED Model System

Employment by Industry for the Greater Wasatch Area, 2000 to 2030

Davis, Salt Lake, Utah, Weber, Box Elder, Juab, Morgan, Summit, Tooele and Wasatch Counties

	2003 Baseline										Total Employment	
Year	Agriculture	Mining	Construction	Manufacturing	TCPU	Trade	FIRE	Services	Government	Non-farm Prop.	2003 Baseline	1997 Baseline
2000	9,613	3,203	61,227	112,563	53,333	215,538	53,471	280,250	148,744	196,659	1,134,601	1,088,332
2001	9,264	2,981	59,407	109,077	53,546	215,521	56,186	285,747	153,391	199,297	1,144,417	
2002	9,217	3,002	54,586	106,708	54,092	217,680	57,349	292,877	156,868	202,367	1,154,746	
2003	9,165	2,982	52,763	107,352	54,145	220,654	58,244	304,446	160,665	205,556	1,175,972	
2004	9,110	2,977	55,193	108,721	54,919	224,214	59,606	320,863	164,840	208,816	1,209,259	
2005	9,057	2,975	56,927	110,091	55,825	228,639	60,895	333,486	168,040	213,502	1,239,437	1,222,691
2006	9,011	2,975	58,683	111,483	56,765	233,305	62,230	346,005	171,735	218,322	1,270,514	
2007	8,967	2,976	60,475	112,907	57,740	238,236	63,633	358,780	175,745	223,415	1,302,874	
2008	8,923	2,979	62,280	114,343	58,731	243,263	65,046	371,548	179,829	228,621	1,335,563	
2009	8,876	2,978	64,157	115,838	59,790	248,780	66,587	384,956	184,365	234,340	1,370,667	
2010	8,824	2,984	65,678	117,327	60,854	254,303	68,128	398,237	188,967	240,080	1,405,382	1,380,452
2015	8,510	2,997	72,618	124,563	65,977	278,492	74,888	456,814	209,022	265,649	1,559,530	1,525,668
2020	8,155	3,002	78,296	131,228	70,673	296,056	79,630	498,890	220,656	284,303	1,670,889	1,643,179
2030	7,546	1,516	88,205	144,109	80,416	329,134	87,648	563,132	233,333	319,359	1,854,398	
AARC	-0.80%	-2.46%	1.22%	0.83%	1.38%	1.42%	1.66%	2.35%	1.51%	1.63%	1.65%	2.08%

Notes: TCPU is Transportation, Communications & Public Utilities
FIRE is Finance, Insurance and Real Estate
Non-Farm Prop is Non-Farm Proprietors
AARC is Average Annual Rate of Change

Source: Governor's Office of Planning and Budget - UPED Model System

Air Quality

Sources and Assumptions

The Utah Division of Air Quality (DAQ) monitors air pollution and implements regulatory measures to protect public health. If health standards are violated, the state must develop a formal plan to meet the standards. This is known as the State Implementation Plan (SIP). Air quality is projected for five major pollutants. They are:

- Carbon Monoxide (CO)
- Nitrogen Oxides (NO_X)
- Sulfur Oxides (SO_X)
- Ozone
- Particulate Matter (PM_{10}, $PM_{2.5}$)

Some pollutants are emitted directly from stacks and tailpipes (CO, NO_X, SO_X, and some PM_{10}); others (ozone, some PM_{10}, and $PM_{2.5}$) are formed by chemical reactions in the air. For example, NO_X and volatile organic compounds (VOC) are so-called precursors for ozone. The presence of NO_X and VOC are not a concern in their own right; rather, the chemical reaction of NO_X and VOC in the presence of sunlight and high outdoor temperatures creates ground-level ozone in the atmosphere. Therefore, NO_X and VOC are used in models as a means to predict the future levels of ozone. Similarly, $PM_{2.5}$ and the smaller size particles of PM_{10} are formed by atmospheric reactions of NO_X and SO_X with ammonia.

To estimate the concentration of the five pollutants, the Division of Air Quality:

- Conducts an emissions inventory of point sources (approximately 300 individual stationary, commercial, or industrial sources); mobile sources (highway vehicles); and area sources (non-road mobile and stationary sources that are too small or numerous to be monitored individually). The emissions inventories quantify the amount of pollution emitted in each county. This type of inventory provides only a very coarse representation of the past and present spatial and temporal distribution of the pollutants, but just not provide forecasts for the future state of air quality.

- Conducts emissions and air quality modeling to predict the amount of pollution in the future. The models, developed by the Environmental Protection Agency (EPA), consider population and industrial growth, vehicle emissions, and the effects of weather and terrain on air quality. They also incorporate known technological advances that will be required in the marketplace and will reduce emissions. These advances include new industrial standards, cleaner vehicle engines and fuels, and other technologies. When concentrations of certain pollutants are projected to violate the state and federal air quality health standards, the Utah Air Quality Broad takes actions to achieve and maintain the standards.

Characteristics and Trends

Air monitoring began in the late 1970s. Since that time, parts of the Greater Wasatch have violated the health standards for SO2, PM_{10}, CO, and ozone. The highest measurements of these pollutants occurred during the 1980s. During the 1990s and early 2000s, however, pollution levels have steadily declined. The last violation of a national standard occurred in 1996. This is particularly significant considering EPA promulgated new, more stringent standards for ozone and $PM_{2.5}$ in 1997. The new standards have been briefly exceeded, but not violated, during the area's most challenging meteorological conditions (very hot summers and winter inversions).

The concentration of the five major air pollutants is projected to decline from the year 2000 to 2030, continuing the trend from the 1990s. Currently, measurements of ozone are close to the standard, but still below. DAQ anticipates difficulty with near-term compliance with the new ozone standard, but this should not be a long-term problem as new vehicle and fuel standards begin to go into effect in 2004. Ambient concentrations of PM_{10}, CO, and SO2, however, are expected to be well below the standard.

Major Issues and Findings

- A comparison of 2020 emissions forecasts from the 1997 Baseline to the 2003 Baseline illustrates a dramatic improvement in the projected air quality outlook over the past six years. The 1997 Baseline anticipated growth in emissions because the new vehicle and fuel standards were not in place. The year 2020 forecast of total emissions in the 2003 Baseline is 2,265 tons per day, which is 49.8% (2,246 tons per day) lower than the 1997 Baseline forecast of 4,511 tons per day. In other words, emissions in 2020 are now expected to be half the previous forecast. CO constitutes approximately two-thirds of the emissions total throughout the planning horizon. The main reason for the improved outlook is lower emissions from new cars, trucks, heavy equipment and cleaner fuels.

- Additional contributions to the improvement include stricter controls on emissions from industrial facilities.

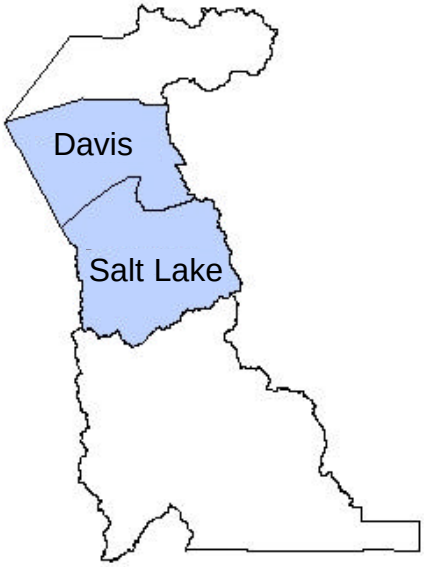
- Ozone and $PM_{2.5}$ primarily result from automobile emissions. Meeting the ozone standard, and, to a lesser extent, the $PM_{2.5}$ standard, in the future may be challenging, but the current outlook is that the standards will continue to be met through 2030.

- Since the national air standards are likely to be met, air quality should not be a constraint on growth through 2030.

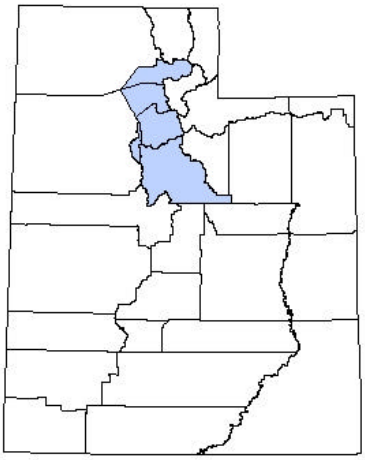
In sum, the improved outlook is primarily due to cleaner vehicles, fuels, and industrial facilities.

Air Quality

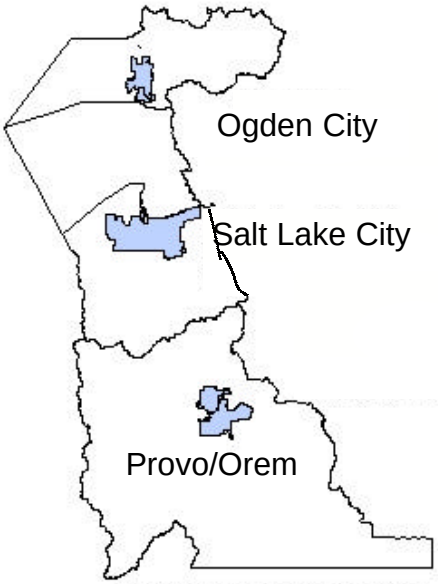
Sulfer Dioxide (SO_2)



Ozone (O_3)



Particulate (PM_{10})

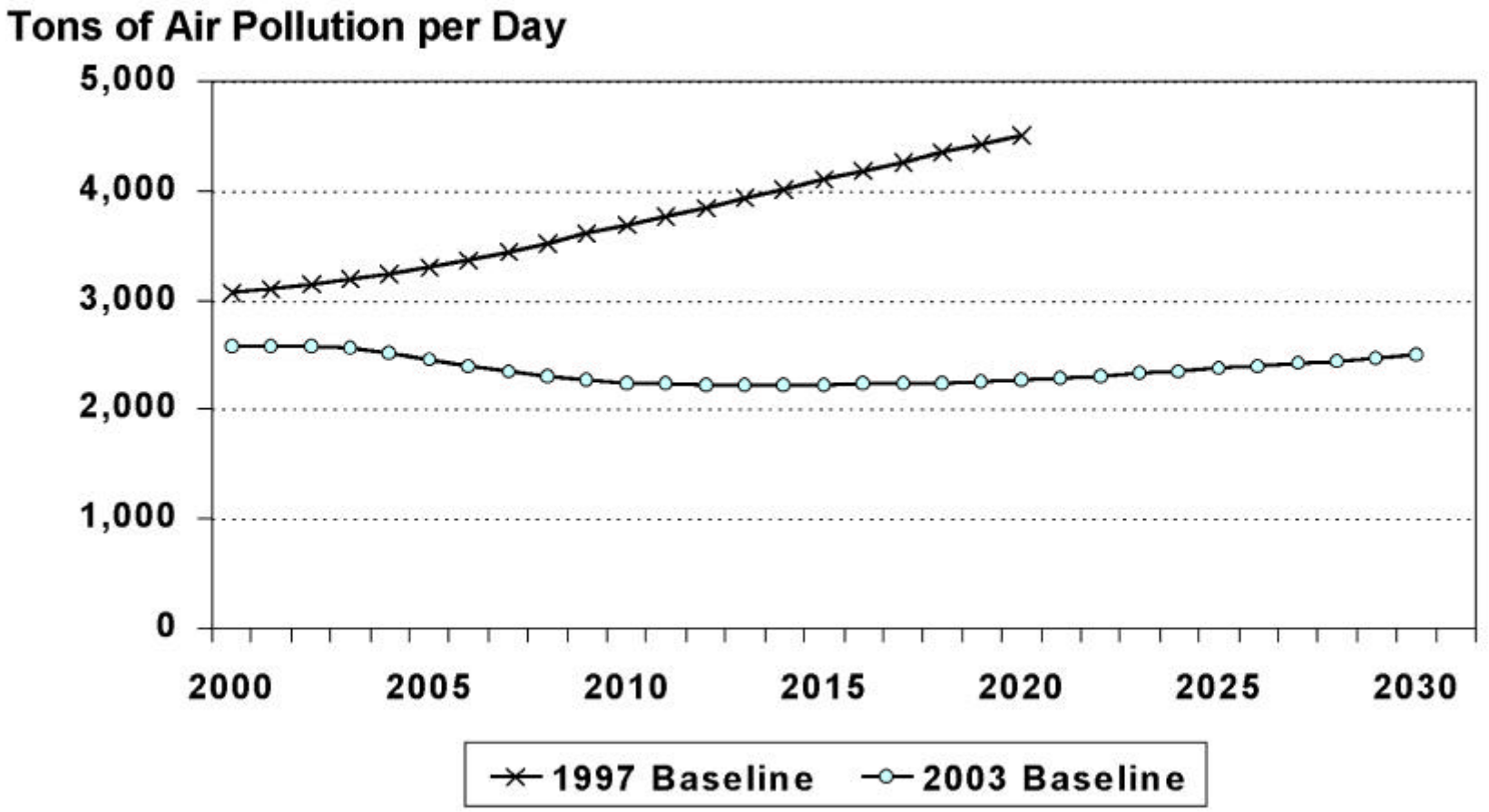


Carbon Monoxide (CO)

Source: Division of Air Quality

Air Quality: Pollution Emissions

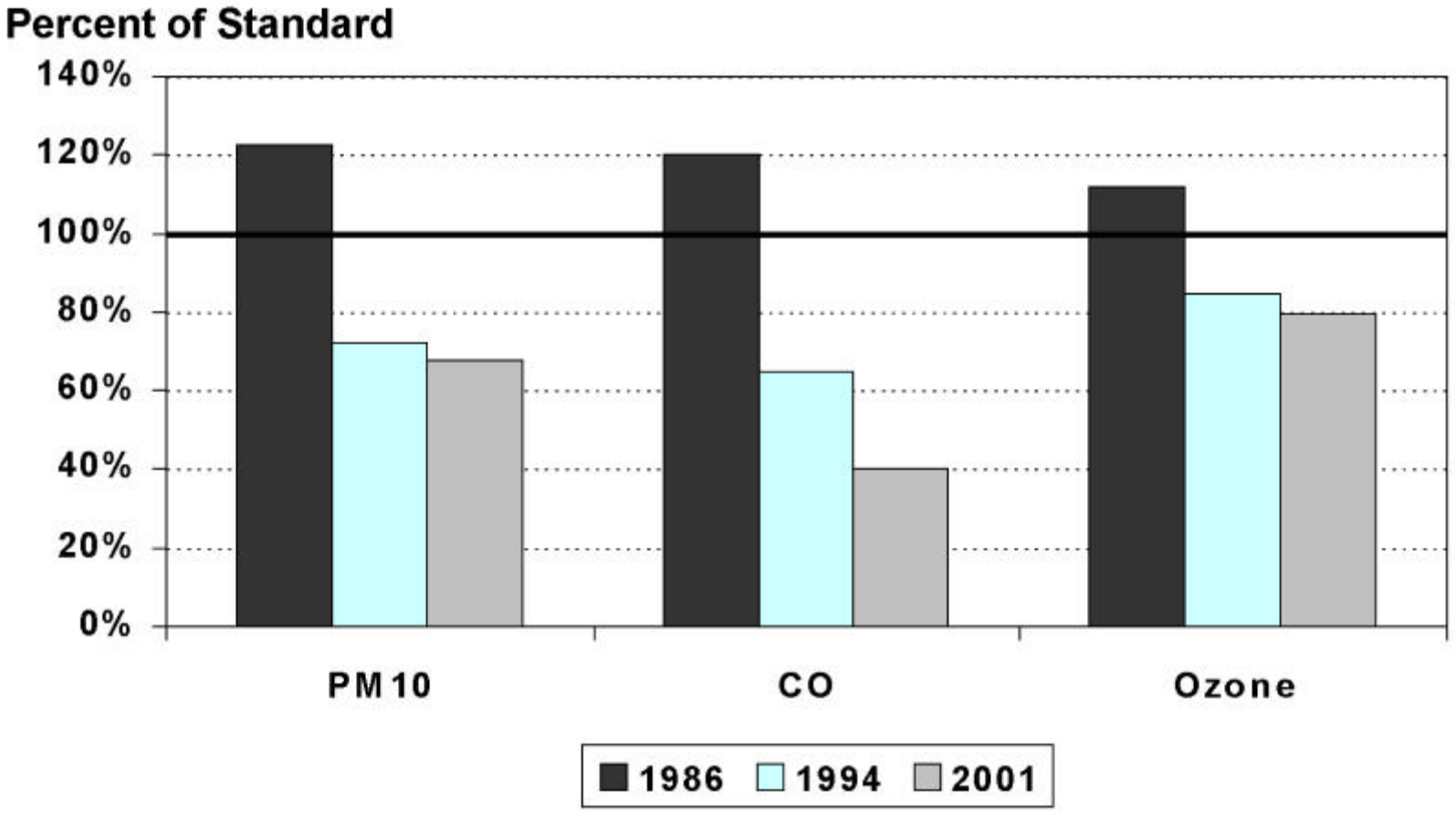
Greater Wasatch Area



Source: Division of Air Quality

Air Quality Trends for Highest Pollution Days

Greater Wasatch Area



Source: Division of Air Quality

Air Pollution Emissions for the Greater Wasatch Area, 2000 to 2030

Davis, Salt Lake, Utah, Weber, Box Elder, Juab, Morgan, Summit, Tooele and Wasatch Counties

	2003 Baseline Emmissions by Pollutant					Total Emmissions by Pollutant	
Year	Particulate Matter (PM_{10})	Sulfur Dioxide (SO_2)	Nitrogen Oxides (NO_x)	Volatile Organic Compounds (VOCs)	Carbon Monoxide (CO)	1997 Baseline	2003 Baseline
2000	102	33	270	479	1,691	3,064	2,576
2001	103	34	268	483	1,694	3,095	2,581
2002	103	33	263	479	1,707	3,149	2,586
2003	102	33	255	472	1,656	3,192	2,519
2004	105	32	249	469	1,600	3,238	2,455
2005	105	34	245	466	1,589	3,295	2,439
2006	108	34	241	467	1,618	3,366	2,466
2007	110	34	232	465	1,507	3,444	2,347
2008	112	34	223	463	1,445	3,525	2,277
2009	114	34	217	464	1,434	3,607	2,262
2010	116	34	212	463	1,420	3,695	2,244
2011	117	34	206	464	1,414	3,770	2,236
2012	119	35	200	466	1,407	3,849	2,227
2013	121	35	195	467	1,404	3,933	2,222
2014	123	35	191	469	1,405	4,018	2,223
2015	124	36	187	472	1,409	4,104	2,228
2016	125	36	185	474	1,411	4,183	2,232
2017	127	37	183	476	1,417	4,263	2,239
2018	128	37	181	479	1,420	4,344	2,245
2019	129	38	180	481	1,426	4,427	2,254
2020	131	38	179	483	1,434	4,511	2,265
2021	132	38	179	485	1,449		2,283
2022	133	38	178	487	1,467		2,303
2023	135	37	178	489	1,485		2,324
2024	136	37	178	492	1,504		2,347
2025	138	37	177	495	1,524		2,371
2026	139	37	177	498	1,545		2,396
2027	140	37	177	501	1,567		2,422
2028	141	37	177	504	1,586		2,446
2029	142	38	178	507	1,609		2,473
2030	143	38	178	509	1,631		2,499
AARC	1.11%	0.42%	-1.38%	0.20%	-0.12%	1.95%	-0.10%

Notes: Data reflects annual average tons per day
AARC is Average Annual Rate of Change, 2000 to 2030

Source: Utah Division of Air Quality

Water

Source and Assumptions

The Utah Division of Water Resources (DWRe) works with local water districts, municipalities, and other local entities to meet the water needs of the public. Water supply and demand projections are prepared by DWRe utilizing the Wasatch Front Water Demand/Supply Model. DWRe also prepares the State Water Plan which directs the orderly and timely planning, conservation, development, protection and preservation of Utah's water resources.

Each year, the Utah Division of Drinking Water (DDW) surveys operating information from the state's 200 or so community drinking water systems. The 2001 DDW survey reported that water rates in the Greater Wasatch Area during 2001 averaged $1.21 per 1,000 gallons, in constant 2003 dollars. DDW reports historical information on water charges back to 1989 from which a baseline trend to 2030 has been developed.

The projections of water supply and use prepared by DWRe, in consultation with local water entities, inform decisions regarding water infrastructure and new water development. The fundamental logic of the modeling process used to make these projections corresponds to the following general points. These points are followed by the main assumptions.

Logic

- A GIS modeling approach formulates individual demand estimates for water use and water supply within each service zone of a water service entity. There are 66 water service entities in the four metropolitan counties.
- Residential demand for water is a function of persons per household, lot size, assessed value of the property, soil type, and season of the year.
- Industrial and commercial demands are calculated as a function of employment by industry for both summer and winter months.
- The water supply is provided by a single source, such as individual wells, and is allocated by a least cost method.
- Both water supply and demand are modified for climatic conditions such as low rain and high temperatures. The model allocates supplies until all demands are satisfied and deficits are quantified.
- The number of persons per household, conservation measures such as low flow plumbing and xeriscaping, water prices, and the number of multiple family residences are all inputs to the modeling process.

Assumptions

- All existing developed water supplies will continue to be available.
- Municipal and industrial supplies will be shared by all users in the Greater Wasatch Area without regard to current distribution networks and water rights.
- The Central Utah Project will be completed as now envisioned.
- Additional groundwater will be developed.
- Considerable infrastructure development, including water treatment plants and distribution systems, will be developed.
- New secondary systems in Davis, Weber, and Utah Counties will convert agricultural water to secondary use as agricultural land becomes urbanized.
- Bear River water will be developed in some form.
- Per capita water use will decline because of low flow plumbing, a gradual increase in xeriscaping by the new residential population, and price increases. None of these changes are considered to be major changes in human behavior, but rather a continuation of current trends.
- The cost of major water infrastructure development has been included.

Characteristics and Trends

Water demand in the Greater Wasatch Area increases steadily from 659,300 acre feet in 2000 to 954,900 acre feet in 2030. Water supply increases in step quantities as new sources are developed. The supply of water in the Greater Wasatch Area increases from 852,600 acre feet in 2000 to 1.04 million in 2020. The supply each year is sufficient to meet new demand, although for this to happen per capita consumption must decline and the price per gallon must increase. Residential water use is expected to decline 10% from 283 gallons per person per day (GPCD) in 2000 to 254 in 2030. Moreover, in order for supply to be sufficient, water providers with

excess water must sell water to those with a supply problem. Water suppliers must build distribution systems to move the water from one provider to another.

Major Issues and Findings

- Water is not a constraint to growth in the Greater Wasatch Area through 2030. However, water must be shared across jurisdictional lines and additional distribution systems will need to be built.

- Residential water use during 2000 in the 2003 Baseline, 283 GPCD, is 9% lower than the 311 reported for 2000 in the 1997 Baseline.

- The 1997 Baseline anticipated a 12.5% reduction in water use between 1995 and 2020, from 319 GPCD to 279 GPCD. Since use during 2002 was 282 GPCD, most of this previously anticipated reduction has already occurred.

- Utah water officials are unsure whether the dramatic decline in water use over the past few years is a short term response to the drought or the beginning of a long term trend. Clearly the drought and the "slow the flow" wise water use campaign have caused people to use water more carefully. Despite an increase in population, and the same hot dry summers, residential water use along the Wasatch Front declined 9% from 370,000 acre-feet during 2001, to 337,000 acre-feet during 2002.

- Continuing the conservation trend of the past few years, residential use is expected to fall by 10% between 2000 and 2030, from 283 GPCD to 254. These conservation gains are based on a continuation of existing trends in the use of low flow plumbing, xeriscaping, and price increases. The gains do not include major changes in human behavior.

- New sources of supply include development of additional groundwater supplies and expansion of water treatment plants to use more mountain stream water in Salt Lake County, irrigation conversion, treatment of Utah Lake/Jordan River water, and Bear River development.

- Water rates are projected to continue to increase through 2030. Salt Lake City, for instance, has implemented an increasing block rate structure so that the average price per gallon of water increases as more water is used. Increasing block rates provide a powerful means to eliminate unnecessary watering. On average throughout the Greater Wasatch Area, water rates are expected to more than double, from $1.18 per 1,000 gallons during 2000 to $2.73 during 2030 (constant 2003 dollars).

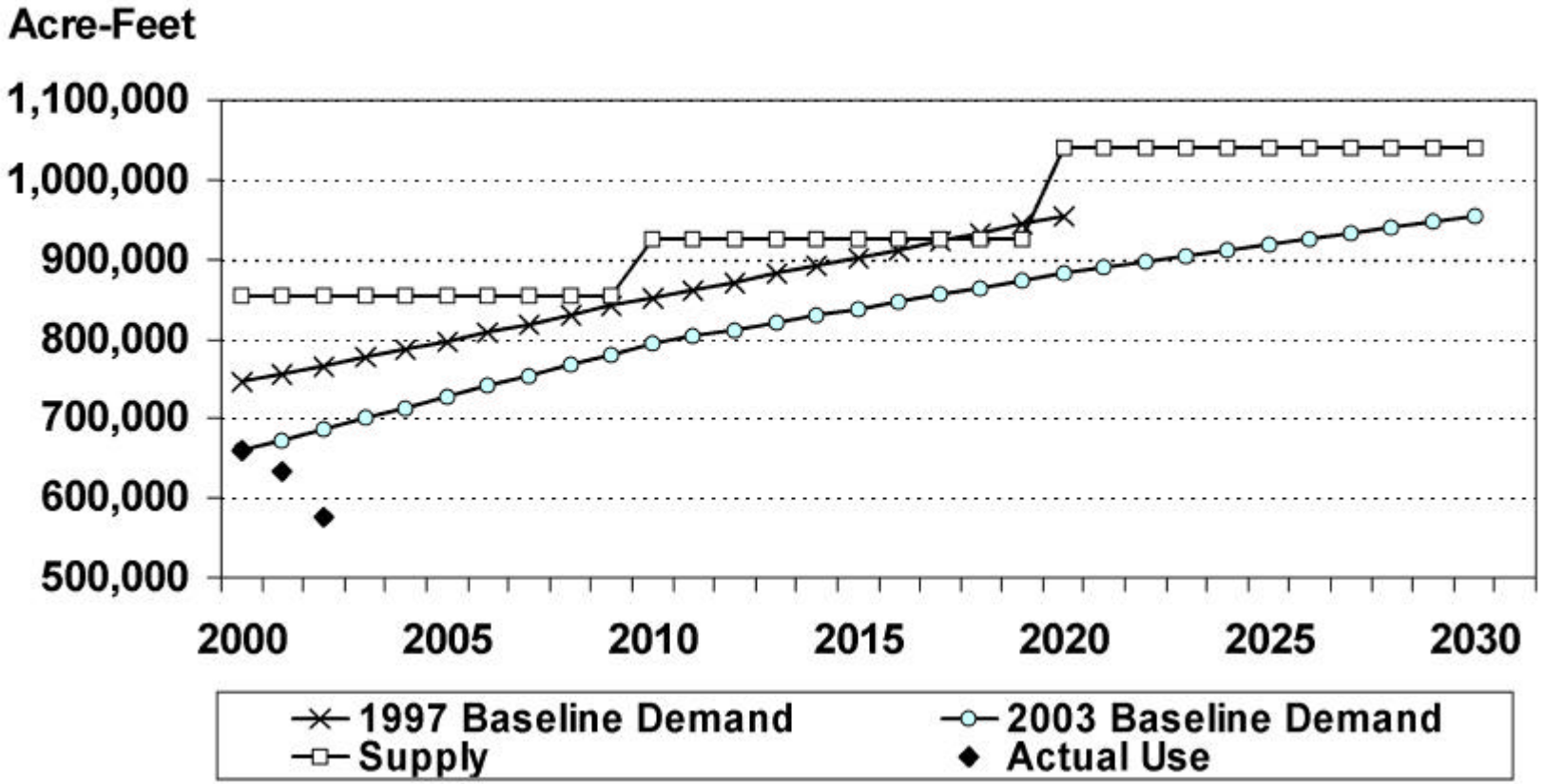
- As streams are developed for water and as water is diverted from agriculture to municipal uses, environmental and recreational impacts could occur. These impacts might include: Impact of riparian areas as flowing water is reduced, reduced water for bird refuges and duck clubs, and increased salinity in the Great Salt Lake.

- The most significant water issue is the cost of paying for future new water infrastructure and water development. These costs are expected to be higher because of an aging delivery system in many areas that needs to be replaced, environmental and health regulations, less federal government financial assistance, and the costliness of the new sources of supply.

- Drinking and waste water infrastructure development is projected to cost $7.6 billion between 2000 and 2030 (constant 2003 dollars). This is about $2,400 per person and $6,900 per household.

Water Supply and Demand

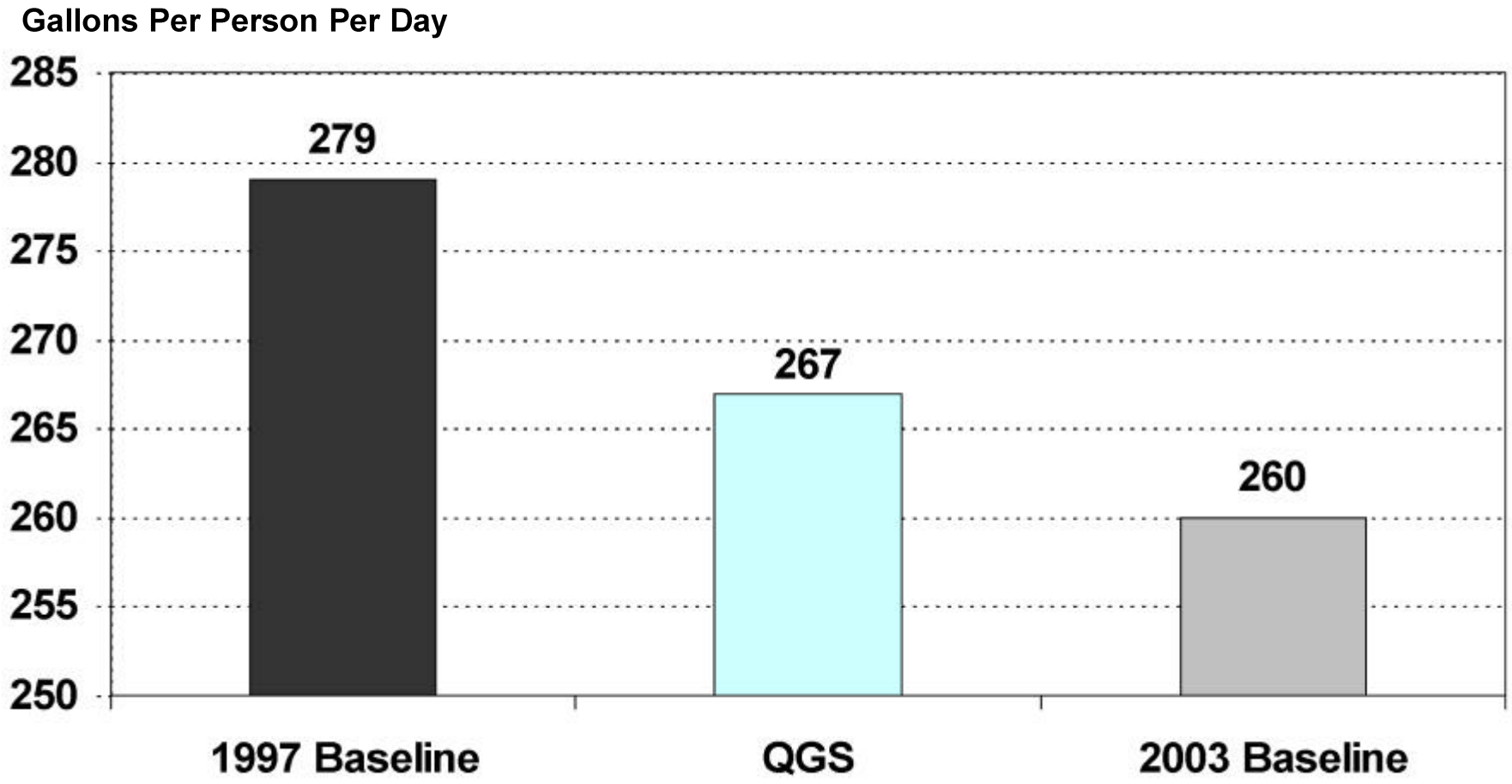
Greater Wasatch Area



Note: Actual use based on sample data from Governor's Water Conservation Team.
Source: Division of Water Resources

Scenarios For 2020 Water Use

Greater Wasatch Area



Note: QGS represents Quality Growth Strategy

Source: Division of Water Resources

Water Demand and Supply in the Greater Wasatch Area, 2000 to 2030

Davis, Salt Lake, Utah, Weber, Box Elder, Juab, Morgan, Summit, Tooele and Wasatch Counties

	Demand (Acre-Feet)		2003 Baseline		
	2003 Baseline	1997 Baseline	Supply (Acre-Feet)	Per Capita Use (GPCD)	Price per 1000 Gallons (Constant 2003 Dollars)
2000	659,300	746,532	852,600	283	$1.18
2001	672,800	756,463	852,600	283	$1.21
2002	686,300	766,526	852,600	282	$1.24
2003	699,800	776,722	852,600	282	$1.31
2004	713,300	787,055	852,600	282	$1.36
2005	726,800	797,524	852,600	282	$1.41
2006	740,300	808,134	852,600	281	$1.46
2007	753,800	818,884	852,600	281	$1.51
2008	767,300	829,777	852,600	281	$1.56
2009	780,800	840,815	852,600	280	$1.62
2010	794,300	852,000	925,800	280	$1.68
2011	803,010	861,707	925,800	278	$1.74
2012	811,720	871,524	925,800	276	$1.80
2013	820,430	881,454	925,800	274	$1.86
2014	829,140	891,496	925,800	272	$1.92
2015	837,850	901,653	925,800	270	$1.99
2016	846,560	911,926	925,800	268	$2.06
2017	855,270	922,315	925,800	266	$2.13
2018	863,980	932,823	925,800	264	$2.20
2019	872,690	943,451	925,800	262	$2.26
2020	881,400	954,200	1,040,700	260	$2.32
2021	888,750		1,040,700	259	$2.37
2022	896,100		1,040,700	259	$2.43
2023	903,450		1,040,700	258	$2.47
2024	910,800		1,040,700	258	$2.52
2025	918,150		1,040,700	257	$2.56
2026	925,500		1,040,700	256	$2.60
2027	932,850		1,040,700	256	$2.64
2028	940,200		1,040,700	255	$2.67
2029	947,550		1,040,700	255	$2.70
2030	954,900		1,040,700	254	$2.73

Notes:

1 Assumes 10% reduction in per capita use from conservation between 2000 and 2030.

2 Assumes 15,200 acre-feet increased development in Salt Lake County and irrigation conversion of 58,600 acre-feet in remaining counties.

3 Assumes 25,000 acre-feet Utah Lake-Jordan River treated water, 50,000 acre-feet from Bear River and an additional 39,900 acre-feet converted from irrigation.

4 Assumes an additional 25,000 acre-feet Utah Lake-Jordan River treated water, an additional 50,000 acre-feet from the Bear River, and an additional 223,500 acre-feet converted from irrigation.

Sources: Utah Division of Water Resources, Utah Division of Drinking Water, Governors Office of Planning and Budget

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Infrastructure Costs

Source and Assumptions

The Governor's Office of Planning and Budget (GOPB) has developed annual estimates of Greater Wasatch infrastructure spending from 2000 to 2030 for transportation and water. All spending estimates are in 2003 dollars. Transportation includes publicly funded streets and highways, and bus and rail transit. Water includes public drinking and waste water system capital improvements.

Logic

GOPB developed base period estimates of spending in 2003 dollars from a variety of sources, including:

- 2002 Utah Department of Transportation (UDOT)
- Annual Statistical Summary
- Wasatch Front Regional Council (WFRC) Long Range Plan
- Mountain Land Association of Governments (MAG) I-15 Corridor Study
- Utah Division of Water Quality (DWQ) Clean Water Needs Survey
- Utah Division of Drinking Water (DWQ) 2001 Drinking Water Survey
- Utah Transit Authority (UTA) Financial Reports
- Central Utah Water Conservancy District Federal Budget Requests
- Salt Lake City Department of Public Utilities (SLCDPU) Financial Reports
- Granger Hunter Improvement District (GHID) Financial Reports

The base period typically included one or more of the years 2000 to 2002.

Given base period spending, future year spending was related to projected future year population.

The timing of a number of large projects was approximately known, so GOPB developed an estimated schedule of funding for these projects. The projects included:

- I-15 in Utah, Davis, and Weber Counties
- The Legacy Mountain View (Legacy/MV) Corridor in western Weber, Davis, Salt Lake and Utah Counties
- TRAX extensions
- Commuter Rail
- Central Utah Project (CUP)
- Bear River Project (BRP)

Assumptions

Transportation

- GOPB developed a funding formula for streets and highways based on state and local financial data from UDOT's statistical summary.
- Formula funds in any given year were a function of population and scheduled highway projects.
- The formula was constrained so that large highway project spending accounted for no more than 60% of total spending in any one year.
- Transit spending was based on the WFRC long range plan and the MAG I-15 Corridor Study.

Water

- The 2001 DDW Survey estimates drinking water system infrastructure spending was $99 million in 2002, or $51 per capita.
- GOPB estimated future year drinking water system infrastructure spending as the product of $51 and projected population.
- CUP and BRP costs were added to the drinking water formula costs.
- GOPB estimated waste water system infrastructure spending using financial reports from SLCDPU and GHID, which include storm water costs. Together, these two agencies serve over 300,000 people, or nearly 20% of the population in the Greater Wasatch. In addition, DWQ's Clean Water Needs Survey guided how much spending is expected to occur between 2000 and 2020.

- GOPB estimated wastewater system infrastructure spending during 2002 at $56 million, or $29 per capita.

- GOPB estimated future year waste water system infrastructure spending as the product of $29 and projected population.

Characteristics and Trends

The anticipated need for certain projects during certain periods suggests spending will be relatively high in some years and relatively low in others. Available funding grows with the economy over time so that funding levels will be substantially higher in the 2020s than the 2000s. This forecast is designed to give some sense of how much infrastructure spending will occur each of the years from 2000 to 2030 if the Greater Wasatch grows as currently forecast. The spending estimate in any given year is not likely to be entirely accurate. The overall forecast is simply one schedule that will finance the planned infrastructure during the approximate period when it is thought to be needed.

Because of the accelerated design build schedule, reconstruction work on I-15 in Salt Lake County during 2000 cost over $260 million, or about 25% of total spending that year. Compressing the funding of what might have been a 10-year project into 5 means the spending during the peak year, 2000, is high relative to the forecast years. Thus, with the completion of I-15, transportation spending fell over 40%, from $758 million in 2000 to $439 million in 2002.

If several major projects are constructed simultaneously on dramatically accelerated design build schedules, infrastructure spending could easily top $2 billion during the peak year, or double the forecast for any single year.

Major Issues and Findings

- GOPB forecasts currently planned infrastructure spending will be $28.9 billion from 2000 to 2030. Transportation spending is $20.9 billion, or over 70% of the total, while water spending is $7.9 billion, or almost 30% of the total.

- Using forecast population and households in 2030, infrastructure spending is $9,200 per capita, and $26,300 per household.

- The infrastructure currently planned for growth in the Greater Wasatch to 2030 can be financed without wrenching change to past funding arrangements.

- In the past, the federal government has been a major source of funding for both transportation and water infrastructure. The importance of federal funding for infrastructure, however, has been declining in recent years and is expected to remain low relative to past standards through 2030.

- Past trends have included increases in both highway user taxes and water rates that exceeded inflation. These increases above inflation must continue in order to finance the planned infrastructure.

- The trend increase in per capita, real inflation adjusted, street and highway spending was 0.77% per year from 1981 to 2002. The forecast increase in trend spending is 0.83% from 2003 to 2030. The forecast, then, anticipates a slightly higher rate of growth in the future than observed in the past.

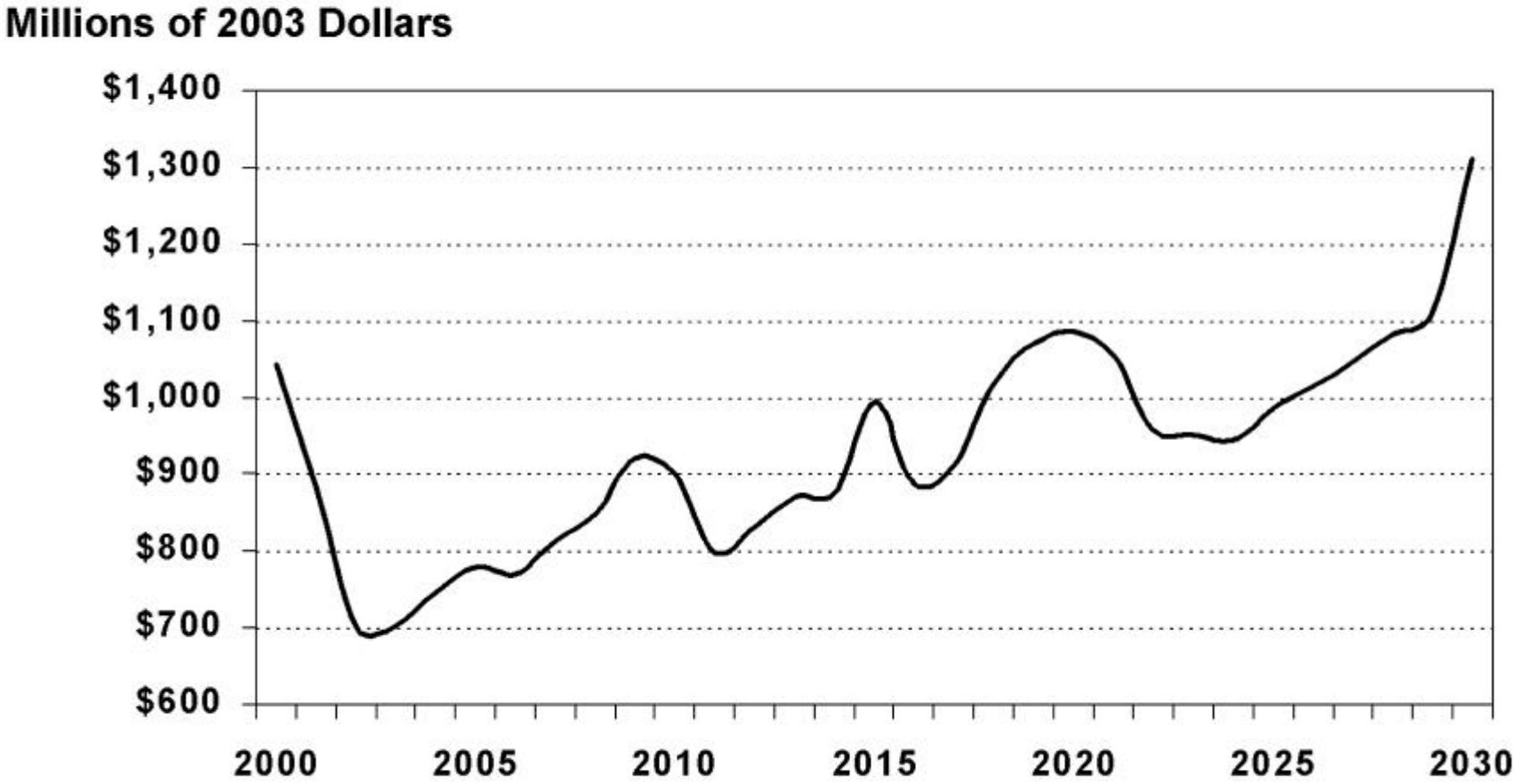
- In contrast to streets and highways, the real inflation adjusted per capita spending on water system infrastructure is forecast not to increase.

- As a percent of Greater Wasatch gross domestic product (GDP), GOPB forecasts infrastructure spending to decline from a peak of 1.5% during 2000, to a range of 0.6% during the 2020s. Spending averages 0.8% of GDP from 2000 to 2030.

- If GDP grows as forecast, the Greater Wasatch will be able to finance planned infrastructure over the next three decades. With less federal participation, the effort required from residents may be somewhat higher than in the past.

Infrastructure Spending

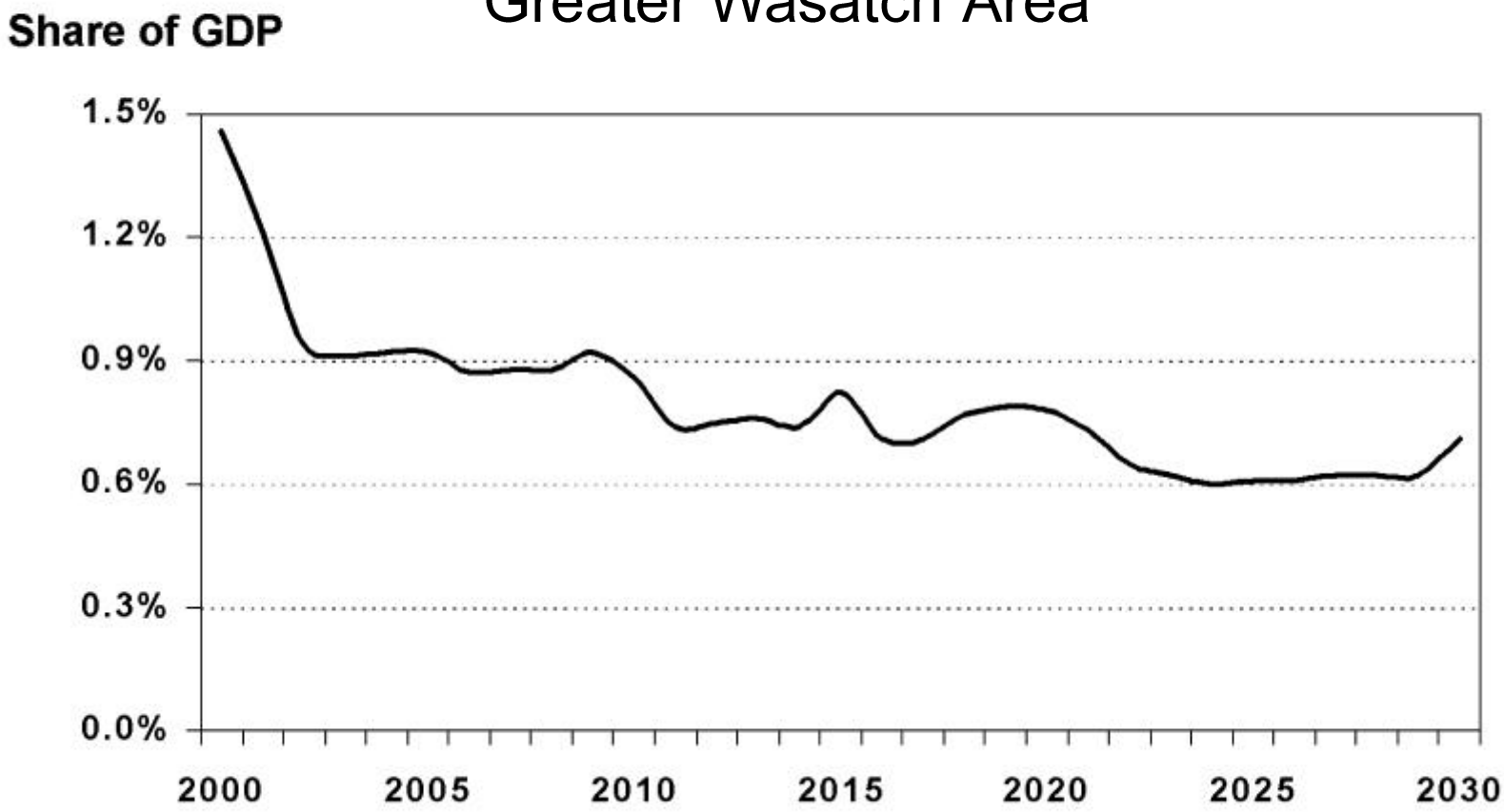
Greater Wasatch Area



Sources: Governor's Office of Planning and Budget, Utah Department of Transportation, Mountainland Association of Governments, Wasatch Front Regional Council, Utah Division of Drinking Water, Utah Division of Water Quality, Utah Division of Water Resources, Central Utah Water Conservancy District, Salt Lake City Department of Public Utilities, Granger Hunter Improvement District

Infrastructure Spending
as a Share of GDP

Greater Wasatch Area



Sources: Governor's Office of Planning and Budget, Utah Department of Transportation, Mountainland Association of Governments, Wasatch Front Regional Council, Utah Division of Drinking Water, Utah Division of Water Quality, Utah Division of Water Resources, Central Utah Water Conservancy District, Salt Lake City Department of Public Utilities, Granger Hunter Improvement District

Annual Infrastructure Costs in the Greater Wasatch Area, 2000 to 2030

Davis, Salt Lake, Utah, Weber, Box Elder, Juab, Morgan, Summit, Tooele and Wasatch Counties
(Millions of 2003 Dollars)

	Transportation						Water					
	Roads	I-15	Legacy/MV	Rail	Bus	Total	Drinking	CUP	BRP	Waste	Total	Total
2000	574	264	0	120	64	758	230	124	0	55	285	1,043
2001	492	141	35	80	17	589	238	122	0	56	293	882
2002	392	85	0	31	16	439	205	107	0	56	261	700
2003	387	0	0	34	18	440	206	107	0	57	263	703
2004	400	0	0	30	48	478	211	109	0	58	269	747
2005	412	0	56	36	19	467	252	148	0	60	311	778
2006	425	57	56	41	22	488	220	114	0	61	281	769
2007	438	86	66	47	25	510	241	133	0	63	304	814
2008	452	114	76	56	30	538	246	135	0	64	310	849
2009	468	143	67	54	86	608	247	133	0	66	313	921
2010	485	171	66	62	33	580	252	135	0	68	320	900
2011	501	198	65	71	38	609	120	0	0	69	190	798
2012	517	196	82	79	42	638	123	0	0	71	194	832
2013	533	198	85	90	48	671	126	0	0	73	199	870
2014	549	200	85	81	43	673	129	0	0	74	203	876
2015	565	199	85	60	161	786	131	0	0	76	207	994
2016	579	197	90	64	34	677	134	0	0	77	211	888
2017	593	195	90	67	36	696	136	0	0	79	215	911
2018	607	193	80	70	38	715	225	0	87	80	304	1,019
2019	619	190	85	94	50	763	226	0	87	81	307	1,071
2020	632	183	99	94	50	776	228	0	87	82	310	1,086
2021	644	178	128	70	113	828	143	0	0	83	226	1,054
2022	657	183	157	47	25	729	145	0	0	84	229	958
2023	670	188	185	31	17	718	147	0	0	85	232	950
2024	687	198	214	16	8	711	148	0	0	86	234	945
2025	703	208	214	30	16	749	150	0	0	87	237	986
2026	707	228	214	44	24	775	152	0	0	88	239	1,014
2027	715	235	185	59	31	805	153	0	0	89	242	1,047
2028	736	251	183	65	35	836	155	0	0	90	245	1,081
2029	753	272	179	72	38	863	157	0	0	91	248	1,110
2030	797	305	174	72	191	1,060	159	0	0	92	250	1,311
Total	17,689	5,256	3,103	1,865	1,419	20,973	5,636	1,369	260	2,298	7,934	28,907

Sources: Governor's Office of Planning and Budget, Utah Department of Transportation, Mountainland Association of Governments, Wasatch Front Regional Council, Utah Transit Authority, Utah Division of Drinking Water, Utah Division of Water Quality, Utah Division of Water Resources, Central Utah Water Conservancy District, Salt Lake City Department of Public Utilities, Granger Hunter Improvement District

Summary Infrastructure Costs in the Greater Wasatch Area, 2000 to 2030

Davis, Salt Lake, Utah, Weber, Box Elder, Juab, Morgan, Summit, Tooele and Wasatch Counties

Category	Level (Millions)*	Per Capita	Per Household
Streets and Highways	$17,689	$5,662	$16,102
Transit	$3,284	$1,051	$2,989
Total Transportation Spending	$20,973	$6,713	$19,091
Drinking Water Systems	$5,636	$1,804	$5,130
Waste Water Systems	$2,298	$735	$2,092
Total Water Spending	$7,934	$2,539	$7,222
Total Infrastructure Spending	$28,907	$9,252	$26,313

Population in 2030	3,124,353
Households in 2030	1,098,578

Note: In millions of 2003 dollars.

Sources: Governor's Office of Planning and Budget, Utah Department of Transportation, Mountainland Association of Governments, Wasatch Front Regional Council, Utah Division of Drinking Water,

Housing

Sources and Assumptions

The 2003 Baseline projection for housing units in the Greater Wasatch Area was derived from demographic estimates and projections of the Governor's Office of Planning and Budget.

The number of new housing units required to meet the needs of an expanding population will be closely related to the change in households. As the number of households increases due to net in-migration and internally generated new household formations (marriages, divorces, changing headship rates, etc.), the demand for new housing units increases in approximately the same order of magnitude, i.e. an increase of 100 new households requires an expansion in the housing inventory of 100 units.

The number of new housing units generally exceeds the number of new households by a small percentage, which includes second homes, vacant units and replacement of demolished units.

The 2000 Census shows that in the ten county Greater Wasatch Area, housing units exceed households by 6.8%. Therefore, the annual households projections from the Governor's Office of Planning and Budget, 2002 Baseline Economic and Demographic Projections, Summary Table 1, were inflated by 6.8% to derive projected annual demand for new housing units.

Others sources included in this section are: U.S. Bureau of the Census for household composition and homeownership rates, and the Office of Federal Housing Enterprise Oversight for housing price index.

Characteristics and Trends

Changing Age Structure of the Population

Changes in the age structure of the population will have important consequences on the demand for housing, as well as the types of units built. During the 1990s the age structure of the population favored the move-up cohort, 35 to 45 year olds resulting in the construction of a disproportionate number of large, high priced homes. As the population of the Greater Wasatch Front ages during the 2000 to 2030 period the percent of population over 40 years of age increases from 31% to 40%. This changing age structure will influence the type and configuration of new residential units.

Household Composition

The composition of households in Utah is unique. Household composition of the state is much less diverse than at the national level and favors housing suited for families. Utah leads the nation in the share of households that are: (1) families with children and (2) married-couples with children. Furthermore, the state ranks last in the percentage of one-person households.

With the relatively large number of young individuals in Utah that will be forming households in the next 10 years, homebuilders, city planners and real estate developers in Utah will--more so than in any other state--need to be keenly aware of the housing needs and preferences of families, particularly families with children.

Minority Immigration

The state's minority population has grown significantly in recent years; a trend that is expected to continue during the 2000 to 2030 period. This phenomenon has important implications for the housing market. Minority households are most likely to be young and larger in size. Accordingly, the housing needs of minority households places special emphasis on moderately priced residential units with more bedrooms in less square footage. This type of housing will be located in high-density developments to minimize land costs.

Affordable Housing

The availability of affordable housing will be an increasing problem in the housing market. In recent years exceptionally, low mortgage rates have helped to improve affordability but the changing age structure of the population, increased immigration and the inevitable return to higher mortgage rates will combine to increase the demand for affordable housing. In addition, political opposition by communities to high-density, affordable housing will continue to be a severe supply-side constraint during the 2000 to 2030 period.

Homeownership

The impact of 40-year low mortgage rates lifted homeownership in Utah to the highest level since 1960--71.5% of all households in Utah in 2000 were homeowners. New residential construction during the 1990s reflects an increase in homeownership. Five out of every six new dwelling units built in the 1990s was an owner-occupied unit.

Despite gains by minority (includes Hispanic population plus the non-White non-Hispanic population) homeowners, the gap in homeownership rates between Whites and minorities increased.

Homeownership rates for Whites increased from 69.7% in 1990 to 75.7% of all households in 2000 while homeownership rates for minority households increased from 48.2% to 51.7%. The gap in homeownership between Whites and minorities will persist in the years ahead.

Housing Prices

The behavior of home prices and rental rates has been characterized by periods of rapid acceleration followed by periods of stable prices. From 1992 to 1997, Utah led the country in housing price increases with a gain of 67% in the housing price index of the Office of Federal Housing Enterprise Oversight. In 2002, Utah ranked last among all states in housing price increase with a gain of only 1.61%. Despite short intervals of rapidly accelerating and then stable prices, over the long term, housing prices in Utah have increased at about 4.5% annually. For the 2000 to 2030 period, a slightly higher average annual growth rate in housing prices is anticipated, with punctuated periods of rapidly accelerating prices. Higher rates of increase will be due to growing scarcity of developable land in Salt Lake County.

Master Planned Communities

Large master planned communities will have a growing presence in the Greater Wasatch Area in future years. These communities are characterized by their size (200 acres to several thousand acres); the variety of housing types such as detached single-family homes, twin homes, town homes and condominiums; mixed uses of land to include not only housing but retail, commercial, churches and schools; and dedicated open space often devoted to parks and trails.

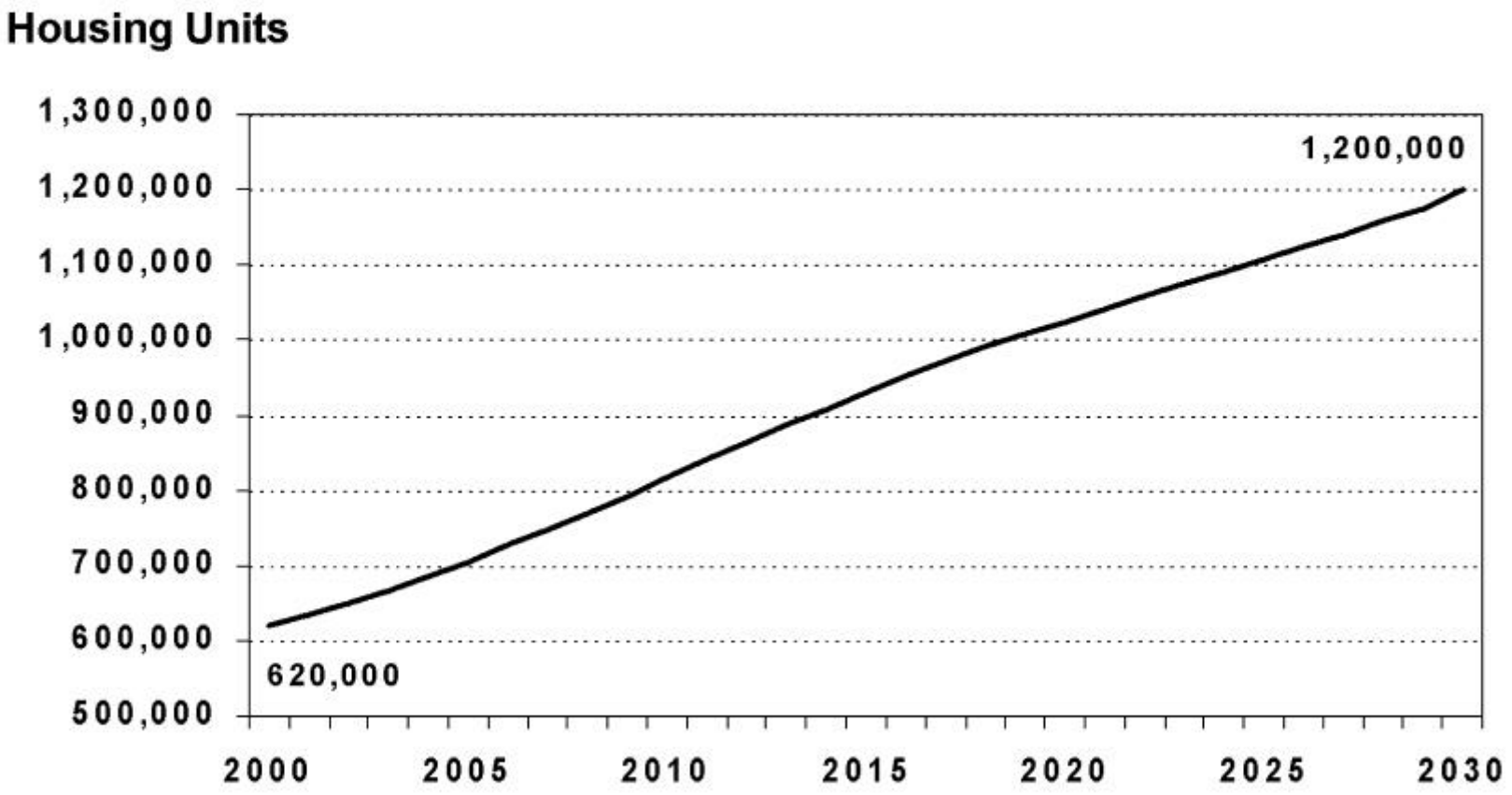
Major Issues and Findings

- Household projections for the Greater Wasatch Front area show that about 560,000 new dwelling units will be required between 2000 and 2030, a 90% increase over the 620,000 units of 2000. Almost two-thirds of these new units will be built in Salt Lake and Utah Counties.

- Demographics and economics will alter future housing preferences. Between 2000 and 2030 the age structure of the population will become older; international immigration, particularly from Latin America, will increase; land prices in the metropolitan area will likely exceed historic rates of increase; and master planned communities will account for a much greater share of new residential development. All of these forces will exert their influence on the housing market of the future and will lead to higher density, more efficient and affordable housing over the 2000 to 2030 period.

Housing Stock

Greater Wasatch Area



Source: Bureau of Economic and Business Research

Housing Stock by County for the Greater Wasatch Area: 2000 to 2030

	Box Elder	Davis	Juab	Morgan	Salt Lake	Summit	Tooele	Utah	Wasatch	Weber	Total	Change Absolute	Change Percent
2000	14,247	74,489	2,835	2,174	312,507	17,672	14,089	105,266	6,658	70,815	620,752		
2001	14,454	76,657	2,950	2,220	319,512	18,488	15,197	109,953	6,958	71,969	638,358	17,606	2.8%
2002	14,721	79,029	3,049	2,210	323,238	19,119	15,682	111,890	7,289	71,885	648,112	9,754	1.5%
2003	15,116	80,601	3,148	2,251	327,873	19,813	16,161	114,843	7,605	72,964	660,375	12,263	1.9%
2004	15,684	83,100	3,263	2,311	336,014	20,671	16,827	118,810	7,996	74,791	679,467	19,093	2.9%
2005	16,241	85,510	3,366	2,382	344,105	21,553	17,495	123,283	8,406	76,607	698,948	19,480	2.9%
2006	16,819	88,074	3,476	2,461	352,815	22,432	18,214	128,351	8,846	78,615	720,101	21,154	3.0%
2007	17,380	90,714	3,591	2,552	361,453	23,398	18,952	132,745	9,283	80,575	740,645	20,544	2.9%
2008	17,943	93,343	3,714	2,643	370,405	24,390	19,746	137,568	9,725	82,598	762,073	21,428	2.9%
2009	18,575	96,252	3,857	2,738	380,730	25,489	20,577	142,612	10,201	84,932	785,963	23,890	3.1%
2010	19,180	99,179	3,984	2,826	391,249	26,633	21,430	147,706	10,670	87,308	810,164	24,201	3.1%
2011	19,760	101,845	4,115	2,914	401,040	27,703	22,237	152,402	11,116	89,457	832,589	22,425	2.8%
2012	20,350	104,634	4,248	3,017	411,351	28,800	23,138	157,257	11,570	91,717	856,082	23,493	2.8%
2013	20,891	107,383	4,393	3,106	421,409	29,852	24,034	161,915	12,025	93,877	878,886	22,804	2.7%
2014	21,422	110,150	4,541	3,183	431,326	30,953	24,915	166,317	12,464	96,019	901,290	22,404	2.5%
2015	21,913	112,805	4,689	3,270	441,218	32,065	25,799	170,424	12,872	98,143	923,197	21,907	2.4%
2016	22,380	115,320	4,825	3,351	450,832	33,135	26,663	174,681	13,254	100,189	944,630	21,433	2.3%
2017	22,790	117,648	4,963	3,429	459,621	34,171	27,514	178,266	13,623	102,019	964,044	19,414	2.1%
2018	23,184	119,910	5,099	3,498	468,147	35,183	28,367	181,387	13,968	103,791	982,534	18,490	1.9%
2019	23,537	121,921	5,228	3,560	475,849	36,165	29,173	184,031	14,259	105,352	999,073	16,539	1.7%
2020	23,863	123,966	5,343	3,625	483,546	37,173	29,968	186,556	14,540	106,916	1,015,496	16,423	1.6%
2021	24,175	125,980	5,454	3,699	491,334	38,145	30,790	189,188	14,818	108,553	1,032,135	16,640	1.6%
2022	24,475	128,050	5,548	3,769	499,097	39,129	31,627	191,858	15,096	110,181	1,048,830	16,694	1.6%
2023	24,758	130,069	5,639	3,834	506,545	40,085	32,478	194,518	15,388	111,709	1,065,023	16,193	1.5%
2024	25,034	132,131	5,729	3,893	513,822	41,055	33,298	197,041	15,672	113,227	1,080,902	15,879	1.5%
2025	25,304	134,163	5,817	3,952	521,516	42,050	34,149	199,813	15,986	114,822	1,097,572	16,670	1.5%
2026	25,591	136,127	5,896	4,013	529,048	43,032	34,967	202,962	16,293	116,409	1,114,339	16,767	1.5%
2027	25,913	138,091	5,985	4,073	536,389	43,973	35,791	206,251	16,628	117,932	1,131,026	16,687	1.5%
2028	26,245	140,041	6,067	4,138	543,616	44,907	36,620	209,687	16,988	119,398	1,147,708	16,682	1.5%
2029	26,607	141,978	6,147	4,200	550,649	45,852	37,453	213,259	17,373	120,835	1,164,354	16,646	1.5%
2030	26,987	143,742	6,232	4,258	556,867	46,807	38,268	217,200	17,788	122,076	1,180,223	15,869	1.4%

Sources: Governor's Office of Planning and Budget
Bureau of Economic and Business Research

Transportation

Source and Assumptions

Transportation planning in the Greater Wasatch Area is the responsibility of the Utah Department of Transportation, Mountainland Association of Governments, Wasatch Front Regional Council, Utah Transit Authority, and local governments. The projections prepared by these entities inform decision makers regarding transportation infrastructure investments. Transportation projections are also critical to the monitoring of air quality. The fundamental logic of the modeling process used in the urbanized counties follows the general points listed below. These points are followed by the main assumptions.

Logic

- Projections of vehicle miles traveled (VMT) are based on analyses of trip generation, trip distribution, mode choice, and route choice.
- Trip generation between and among small areas is based largely on the residential and employment characteristics of these areas. For instance the more employment an area has, the more work trips it generates. The more retail employees located in an area, the more shopping trips that are attracted.
- Trip distribution is allocated based on the premise that the more distant the destination, the more costly the trip.
- Mode choice includes the option to take public transit, drive alone, car pool, or travel in a non motorized mode such as walking or bicycling. Choices are based on the attractiveness of each mode as measured by accessibility to mass transit, automobile ownership, costs and time required to use the mode, and pedestrian friendliness.
- The choice of route is determined by the best path through the highway network for each type of trip based on the shortest route in terms of time and distance.

Assumptions

- The projections are based on detailed observations about the number of individual trips made by different sized households and the number of vehicles they own. For instance, in Utah County trips per day per household range from 4.7 for a one-person household to 32.7 for a six-person household.
- The projections also include information about the nature of travel demand. Commuting and work related travel comprise 30% of all travel.
- Initially, drive-alone-travel comprises 77% of work trips, followed by 14% with one or more passengers, 3% by bus, and 7% walking, bicycling, working at home, or other. These percentages change as population grows and the transportation system develops.
- Cost estimates for major transportation infrastructure developments include those projects that are part of the long range plans of the Metropolitan Planning Organizations, the Utah Department of Transportation, and the Utah Transit Authority. These cost estimates include local municipality investments when they are part of the regional plans, but exclude them when they are not. Transportation cost estimates are therefore minimum estimates and some estimates are higher.
- The major projects included in the cost estimates are: I-15 reconstruction in Davis and Utah, and Weber Counties, the Legacy Parkway in Davis County, the Mountain View Corridor in Salt Lake and Utah Counties, I-80 improvements, and commuter rail and TRAX extensions in Salt Lake County. Dozens of smaller projects have been identified and included.

Characteristics and Trends

Average weekday vehicle miles of travel are projected to increase from 49 million in 2000 to 93 million in 2030. The projected annual growth in VMT of 2.2% during the 30-year period from 2000 to 2030 is higher than the projected annual growth in population of 1.8%. VMT per capita is projected to increase from 25.7 in 2000 to 29.7 in 2030.

Despite large highway and transit investment, average peak period speeds are projected to decline from 32.0 miles per hour in the urbanized counties in 2000 to 28.5 miles per hour in 2030. Peak period delay per trip is projected to double in the urbanized counties, from 1.9 minutes in 2000 to 4.4 minutes in 2030. Average peak period delay in terms of vehicle-hours increases from 80,000 in 2000 to 295,000 in 2030. These reductions in the transportation system's performance occur despite the major investments in highways and mass transit included in the 2003 Baseline.

Transit use is projected to increase from 28 million passengers annually in 2000 to 70 million in 2030. In 2020, transit use in the 2003 Baseline is forecast to be 56 million, or almost 45% higher than the 39 million forecast in the 1997 Baseline. The dramatic increase results from a massive expansion in planned transit investment. Previously, just mainline TRAX from Sandy to downtown Salt Lake was planned. The current plan includes TRAX spurs to the University of Utah and the Salt Lake International Airport, to West Valley, to South Jordan, and to point of the Mountain. And over 50 miles of commuter rail from Ogden to Provo is planned.

Major Issues and Findings

- The use of roads in the Greater Wasatch Area as measured by total vehicle miles of travel is projected to increase at a rate faster than population growth. This occurs as residents continue to increase vehicle ownership, drive farther for work trips, and make more non-work trips. A changing age structure and increasing female participation in the labor force also impact this trend.

- Investment in transportation infrastructure will keep transportation system performance at a fairly high level. A comparison of average peak period speed and average peak period delay from the 1997 Baseline to the 2003 Baseline forecasts for the year 2020 illustrates substantial improvement in projected peak period performance.

- Without the planned highway and transit improvements, average peak period delay per trip in 2030 would be 10.4 minutes instead of 4.4 minutes. In other words, traffic congestion would be more than twice as bad without the expanded investment.

- Over the entire 30-year period average peak period speed is projected to decline from 32 mph in 2000 to 29 mph in 2030. Minutes of peak-period delay per trip are projected to increase from 1.9 in 2000 to 4.4 in 2030.

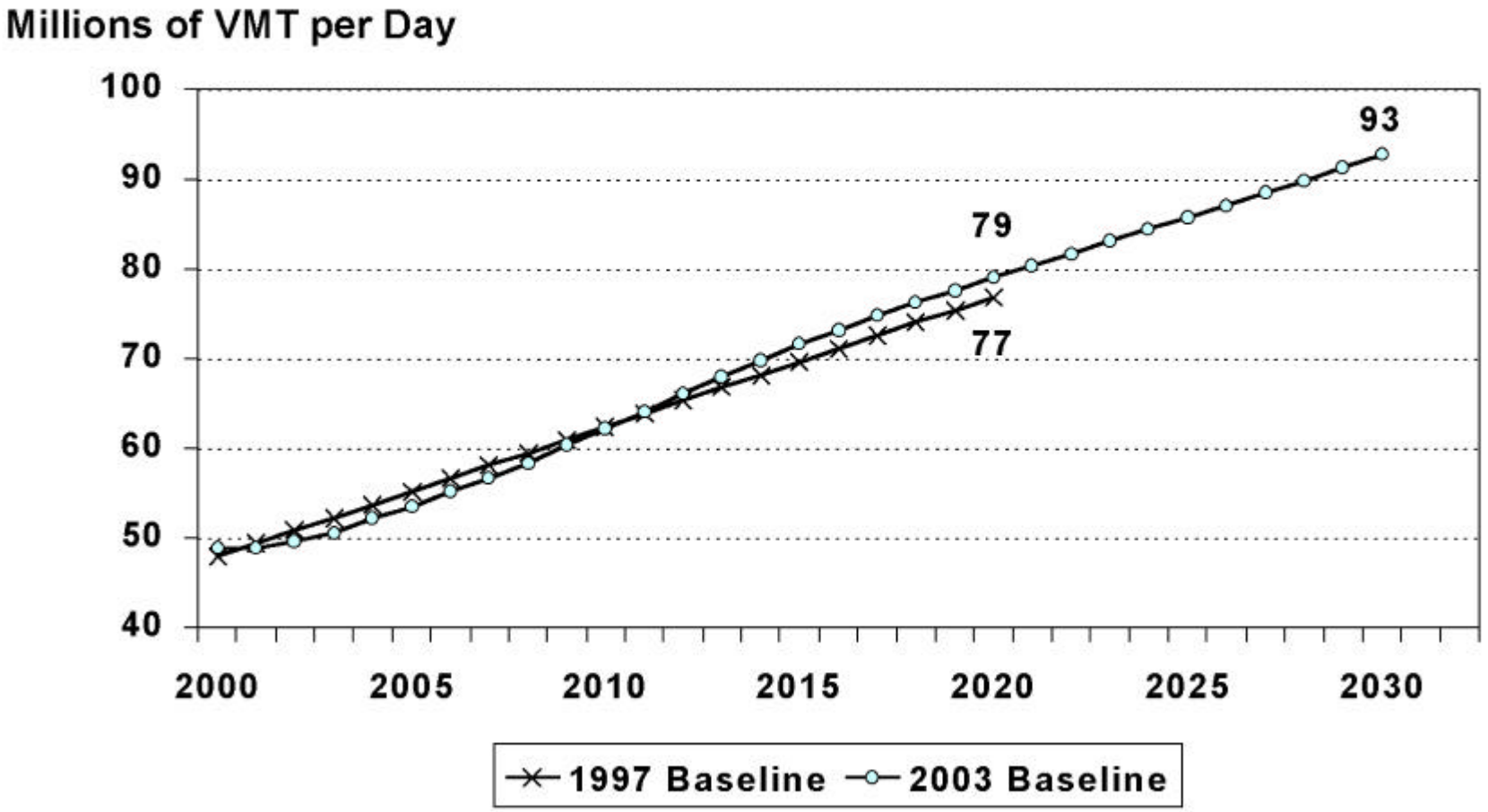
- Future maintenance and repair costs will take up a larger portion of future budgets than they have in the past. Existing transportation infrastructure is aging and increased traffic will quicken that deterioration.

- The investment in rail and bus transit will provide mobility benefits throughout the region and will help increase accessibility, air quality, congestion reduction, and cost effectiveness. One of the major benefits of the massive transit investments that are planned is that people can choose not to drive during peak congestion, which allows the highway network to perform relatively well. Transit share of work trips increases from 3.6% in 2000 to 6.5% in 2030.

- Transportation infrastructure development is projected at $20.9 billion between 2000 and 2030 (2003 dollars). This equates to $6,689 per person in the year 2030 and almost 70% of total infrastructure spending during the 30-year period.

Vehicle Miles Traveled

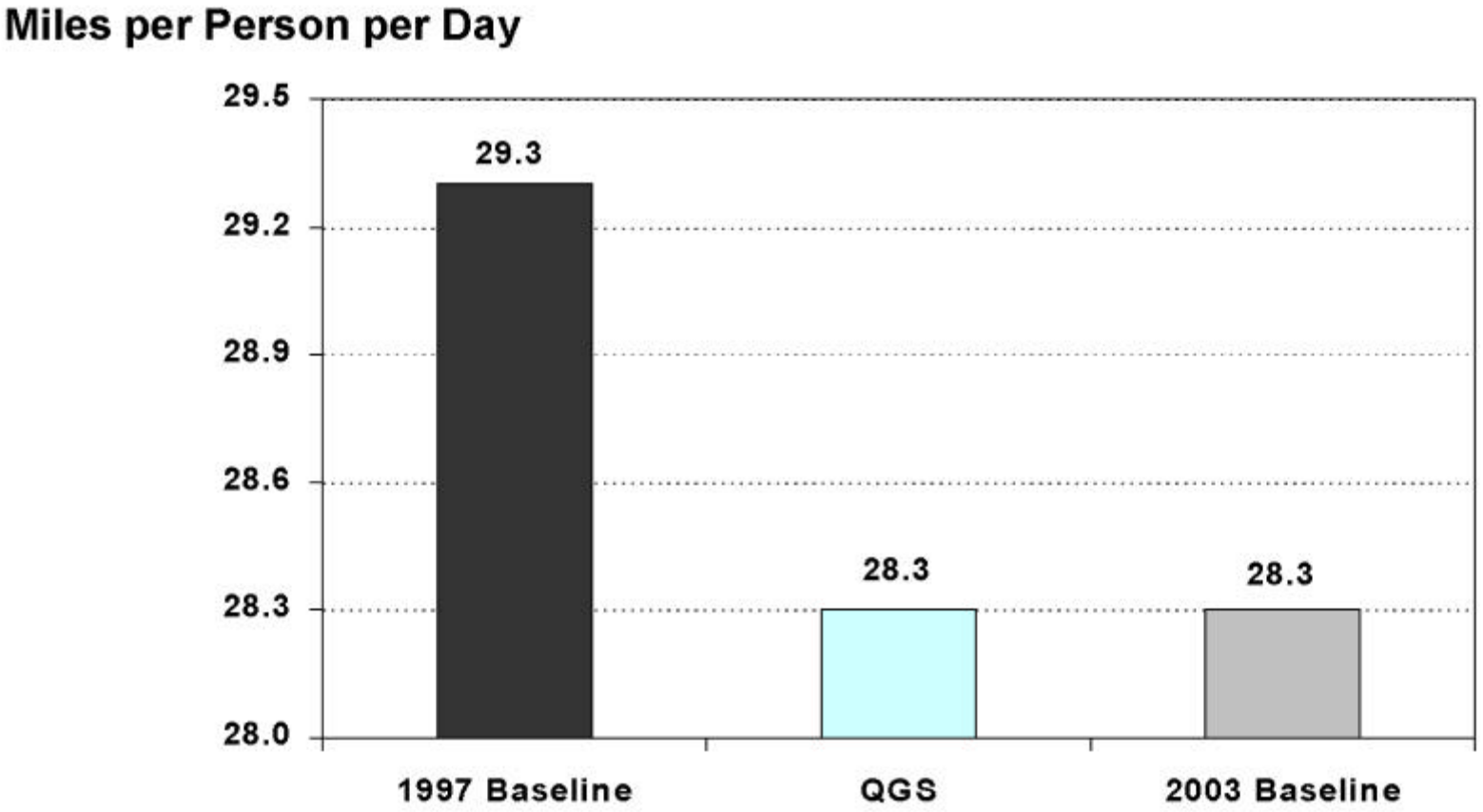
Greater Wasatch Area



Sources: Wasatch Front Regional Council, Utah Department of Transportation, and Governor's Office of Planning & Budget

2020 Vehicle Travel

Greater Wasatch Area

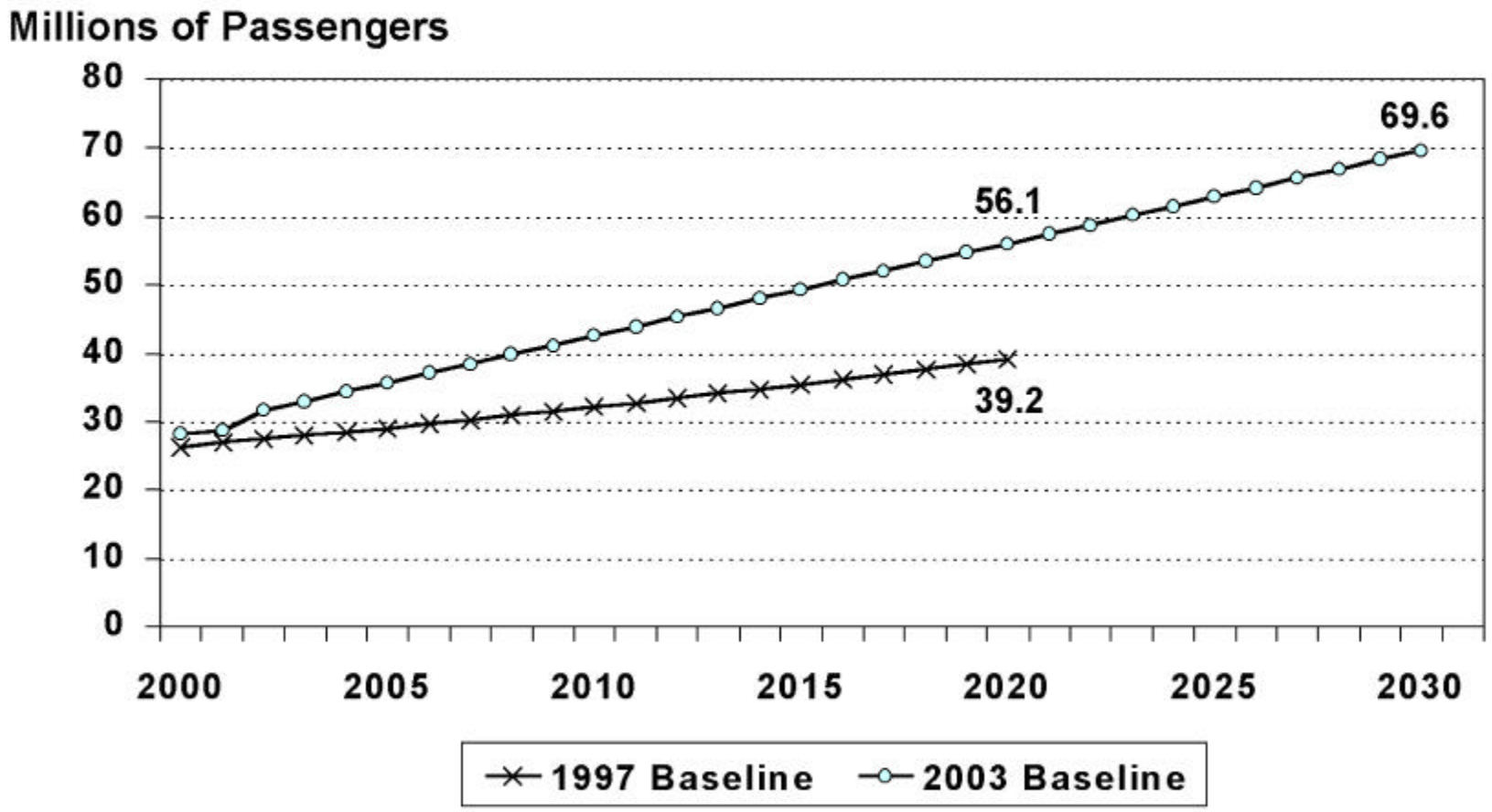


Notes: 1) 1997 Baseline miles per person per day of 29.3 from Scenario B
2) QGS is the Quality Growth Strategy

Sources: Wasatch Front Regional Council, Utah Department of Transportation, and Governor's Office of Planning & Budget

Transit Use

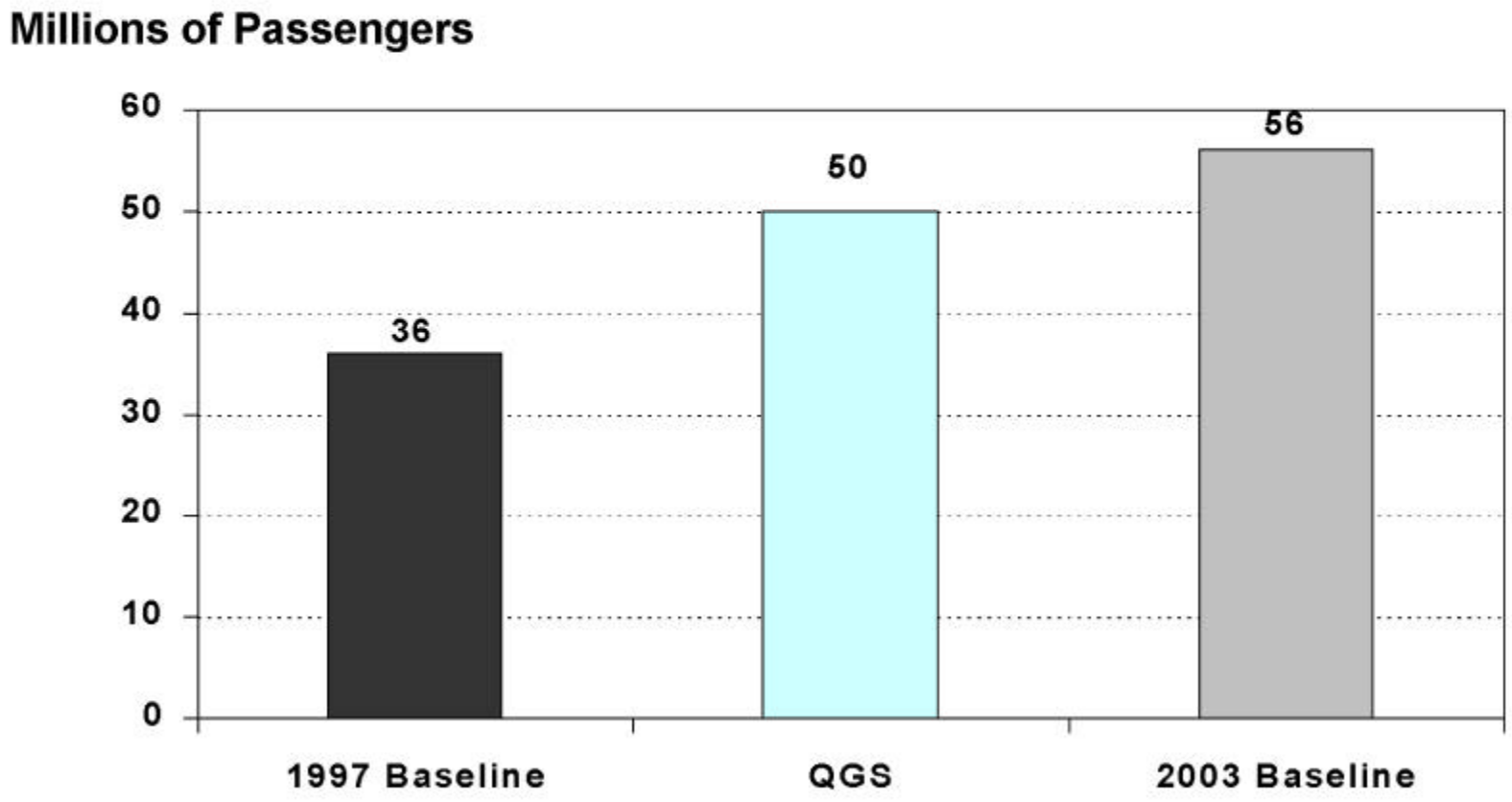
Greater Wasatch Area



Source: Utah Transit Authority

2020 Transit Use

Greater Wasatch Area

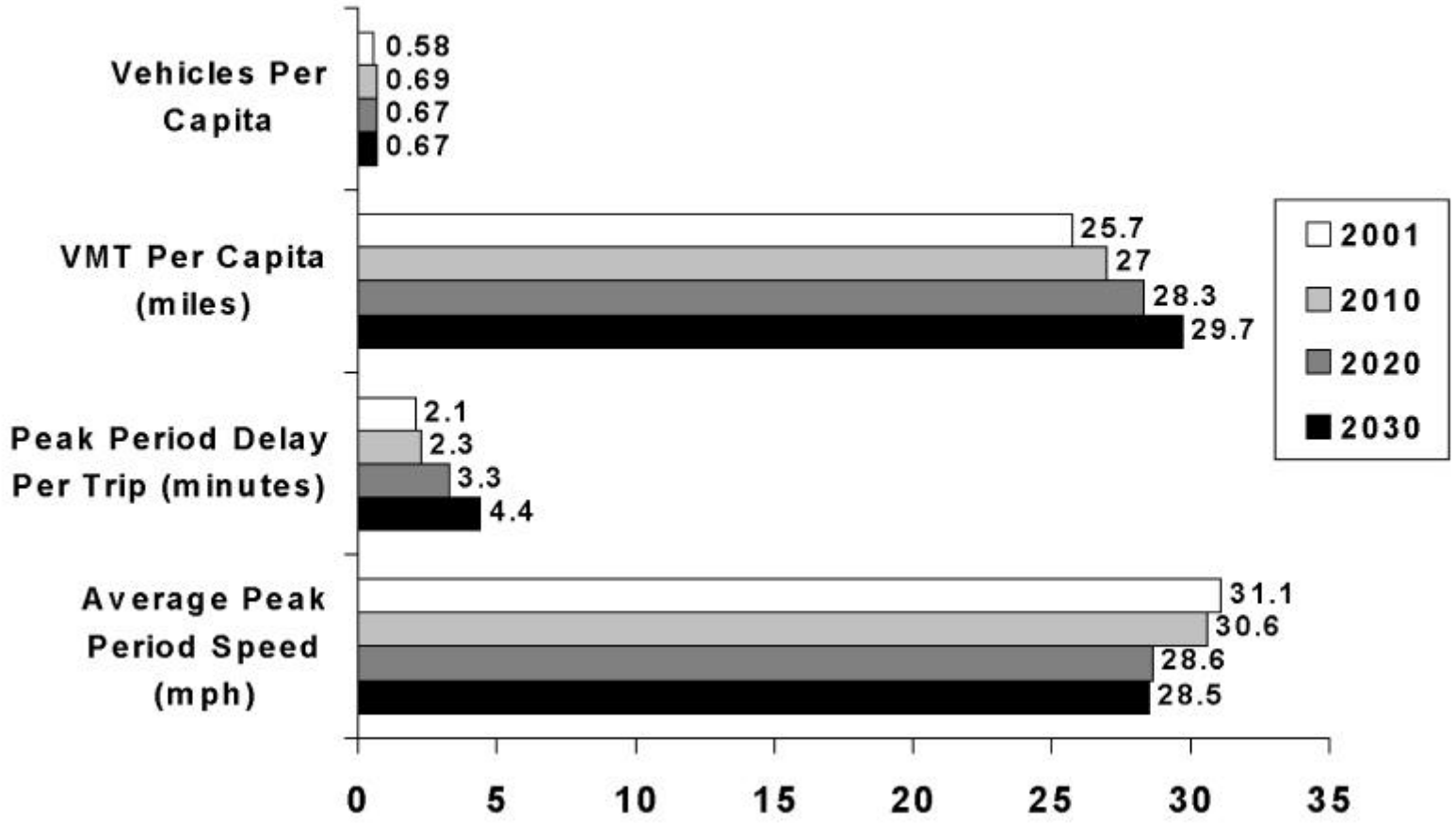


Note: QGS is the Quality Growth Strategy

Source: Utah Transit Authority

Transportation Characteristics

Greater Wasatch Area



Sources: Wasatch Front Regional Council, Utah Department of Transportation, and Governor's Office of Planning & Budget

Vehicle Miles Traveled (VMT) for the Greater Wasatch Area, 2000 to 2030

	Davis	Salt Lake	Utah	Weber	Box Elder	Juab	Morgan	Summit	Tooele	Wasatch	Total VMT	Population	VMT Per Capita
2000	5,718,954	21,626,875	8,625,524	3,981,334	2,960,000	1,040,000	380,000	2,120,000	1,820,000	640,000	48,912,687	1,857,797	26.3
2001	5,960,342	21,135,517	9,242,502	4,126,005	2,547,639	1,021,197	329,686	1,768,264	2,071,722	717,326	48,920,200	1,900,146	25.7
2002	6,031,625	21,354,808	9,426,157	4,168,492	2,619,707	1,050,085	339,012	1,818,285	2,130,328	737,618	49,676,118	1,918,874	25.9
2003	5,902,945	22,158,240	9,522,993	4,088,022	2,702,917	1,083,439	349,780	1,876,039	2,197,993	761,047	50,643,414	1,945,571	26.0
2004	6,060,089	22,766,890	9,767,750	4,201,189	2,813,734	1,127,859	364,121	1,952,955	2,288,108	792,249	52,134,943	1,992,130	26.2
2005	6,213,572	23,361,884	10,006,561	4,311,841	2,920,821	1,170,783	377,979	2,027,282	2,375,191	822,401	53,588,316	2,036,991	26.3
2006	6,373,474	23,981,111	10,255,664	4,426,971	3,032,249	1,215,448	392,399	2,104,622	2,465,804	853,775	55,101,516	2,083,657	26.4
2007	6,559,454	24,729,115	10,533,071	4,449,916	3,149,758	1,262,551	407,605	2,186,183	2,561,361	886,862	56,725,875	2,134,130	26.6
2008	6,751,075	25,498,953	10,819,280	4,475,440	3,272,117	1,311,597	423,440	2,271,109	2,660,862	921,314	58,405,187	2,186,101	26.7
2009	6,970,288	26,373,757	11,149,365	4,517,595	3,408,174	1,366,134	441,046	2,365,544	2,771,503	959,622	60,323,028	2,246,515	26.9
2010	7,193,699	27,265,363	11,485,752	4,560,457	3,548,355	1,422,325	459,187	2,462,841	2,885,497	999,093	62,282,569	2,307,842	27.0
2011	7,397,386	28,082,973	11,842,444	4,589,137	3,685,213	1,477,183	476,898	2,557,830	2,996,789	1,037,627	64,143,480	2,364,846	27.1
2012	7,608,947	28,931,116	12,212,185	4,621,287	3,827,183	1,534,090	495,270	2,656,369	3,112,238	1,077,601	66,076,286	2,423,952	27.3
2013	7,791,184	29,628,038	12,549,629	4,826,406	3,967,710	1,590,419	513,455	2,753,906	3,226,514	1,117,168	67,964,430	2,480,860	27.4
2014	7,967,773	30,303,511	12,878,338	5,028,792	4,107,214	1,646,338	531,508	2,850,733	3,339,957	1,156,448	69,810,612	2,535,672	27.5
2015	8,134,713	30,942,313	13,191,716	5,225,641	4,242,928	1,700,737	549,071	2,944,929	3,450,319	1,194,660	71,577,027	2,587,089	27.7
2016	8,289,122	31,533,461	13,484,904	5,414,718	4,373,830	1,753,208	566,010	3,035,786	3,556,767	1,231,517	73,239,324	2,634,239	27.8
2017	8,432,047	32,080,923	13,759,417	5,596,305	4,501,287	1,804,298	582,505	3,124,251	3,660,415	1,267,405	74,808,852	2,677,521	27.9
2018	8,565,327	32,591,678	14,018,091	5,771,285	4,624,467	1,853,674	598,445	3,209,747	3,760,583	1,302,088	76,295,385	2,717,444	28.1
2019	8,684,113	33,047,267	14,252,841	5,936,067	4,741,753	1,900,687	613,623	3,291,153	3,855,960	1,335,112	77,658,575	2,752,547	28.2
2020	8,799,782	33,490,970	14,482,199	6,098,140	4,855,911	1,946,446	628,396	3,370,388	3,948,793	1,367,255	78,988,281	2,786,280	28.3
2021	8,903,449	33,888,964	14,813,319	6,251,207	4,971,734	1,992,873	643,384	3,450,779	4,042,979	1,399,866	80,358,555	2,821,242	28.5
2022	9,006,911	34,286,145	15,142,587	6,403,365	5,086,820	2,039,004	658,278	3,530,658	4,136,566	1,432,271	81,722,604	2,855,743	28.6
2023	9,162,094	34,674,736	15,470,321	6,497,033	5,200,509	2,084,575	672,990	3,609,566	4,229,017	1,464,281	83,065,121	2,889,232	28.7
2024	9,312,546	35,047,312	15,789,442	6,587,502	5,312,832	2,129,598	687,525	3,687,528	4,320,357	1,495,908	84,370,550	2,921,100	28.9
2025	9,469,227	35,445,075	16,118,549	6,682,521	5,428,782	2,176,076	702,530	3,768,006	4,414,647	1,528,555	85,733,969	2,954,725	29.0
2026	9,621,753	35,828,878	16,440,054	6,774,739	5,544,000	2,222,260	717,440	3,847,976	4,508,341	1,560,996	87,066,437	2,986,931	29.1
2027	9,779,111	36,232,165	16,769,323	6,870,482	5,663,670	2,270,229	732,927	3,931,037	4,605,657	1,594,691	88,449,293	3,020,513	29.3
2028	9,939,700	36,648,681	17,103,718	6,968,598	5,786,020	2,319,271	748,760	4,015,958	4,705,150	1,629,141	89,864,996	3,054,911	29.4
2029	10,104,753	37,082,708	17,445,447	7,069,932	5,912,906	2,370,132	765,180	4,104,027	4,808,333	1,664,867	91,328,285	3,090,542	29.6
2030	10,264,211	37,497,209	17,777,181	7,167,433	6,039,057	2,420,699	781,505	4,191,586	4,910,918	1,700,387	92,750,186	3,124,353	29.7

Sources: Wasatch Front Regional Council, Utah Department of Transportation, and Governor's Office of Planning and Budget

Transportation Characteristics for the Greater Wasatch Area, 2000 to 2030

Davis, Salt Lake, Utah, Weber, Box Elder, Juab, Morgan, Summit, Tooele and Wasatch Counties

	2000	2010	2020	2030
Average Weekday VMT (millions)	48.9	62.3	79.0	92.8
VMT Per Capita	25.7	27.0	28.3	29.7
Vehicles Per Capita*	0.58	0.69	0.67	0.67
Peak Period Trip Time (minutes)*	21.8	22.5	23.6	24.0
Average Peak Period Speed (mph)*	31.1	30.6	28.6	28.5
Average Peak Period Delay (vehicle-hrs)*	94,000	116,000	199,000	295,000
Peak Period Delay Per Trip (minutes)*	2.1	2.3	3.3	4.4
Transit Passengers (millions)*	28.2	42.5	56.1	69.6
Transit Share of All Trips*	1.2%	1.4%	1.6%	1.8%
Transit Share of Work Trips*	3.6%	4.9%	5.8%	6.5%

	2000-2010	2000-2020	2000-2030
Population Growth From Base Year	407,696	886,134	1,224,207
VMT Growth From Base Year	13,362,369	30,068,081	43,829,986

Note: * Metro counties only

Sources: Wasatch Front Regional Council
Mountainland Association of Governments
Utah Department of Transportation
Governor's Office of Planning & Budget

Utah Transit Authority System Performance in the Greater Wasatch Metro Counties, 2000 to 2030

Davis, Salt Lake, Utah, and Weber Counties

	Millions of Passengers		2003 Baseline		
Year	2003 Baseline	1997 Baseline	Revenue-Miles	O&M Costs	Cost per Rev-mi
2000	28.2	26.3	22,966,759	94,471,438	4.11
2001	28.7	26.9	23,508,841	108,447,528	4.61
2002	31.7	27.4	24,182,853	114,841,228	4.75
2003	33.1	28.0	24,856,865	121,512,402	4.89
2004	34.4	28.5	25,530,877	128,475,969	5.03
2005	35.8	29.1	26,204,890	135,747,839	5.18
2006	37.1	29.7	26,878,902	143,429,114	5.34
2007	38.5	30.3	27,552,914	151,450,591	5.50
2008	39.8	30.9	28,226,926	159,825,872	5.66
2009	41.2	31.5	28,900,938	168,569,072	5.83
2010	42.5	32.1	29,574,950	177,694,840	6.01
2011	43.9	32.8	30,248,962	187,218,375	6.19
2012	45.3	33.4	30,922,974	197,155,450	6.38
2013	46.6	34.1	31,596,987	207,522,432	6.57
2014	48.0	34.8	32,270,999	218,336,300	6.77
2015	49.3	35.5	32,945,011	229,614,672	6.97
2016	50.7	36.2	33,619,023	241,372,010	7.18
2017	52.0	36.9	34,293,035	253,629,391	7.40
2018	53.4	37.6	34,967,047	266,406,277	7.62
2019	54.7	38.4	35,641,059	279,722,844	7.85
2020	56.1	39.2	36,315,071	293,600,014	8.08
2021	57.4		36,989,084	308,059,480	8.33
2022	58.8		37,663,096	323,123,733	8.58
2023	60.2		38,337,108	338,816,091	8.84
2024	61.5		39,011,120	355,160,728	9.10
2025	62.9		39,685,132	372,182,703	9.38
2026	64.2		40,359,144	389,907,997	9.66
2027	65.6		41,033,156	408,363,536	9.95
2028	66.9		41,707,168	427,577,235	10.25
2029	68.3		42,381,181	447,578,026	10.56
2030	69.6		43,055,193	468,395,895	10.88

Notes: O&M Costs are operation and management costs
Rev-mi refers to revenue-miles
Source: Utah Transit Authority

Land Use

Source and Assumptions

With technical assistance from the Utah Automated Geographic Reference Center (AGRC), the Governor's Office of Planning and Budget (GOPB) has analyzed land use in the Greater Wasatch to 2030. Population and employment data from the Mountainland Association of Governments (MAG), the Wasatch Front Regional Council (WFRC), and the Census were the primary inputs to the analysis. Building on previous work AGRC completed for the 1997 Baseline, the 1998 Scenarios, and the 1999 Strategy, GOPB has developed a simple land use model and mapped the results for 2000 and 2030.

AGRC's most current estimate of urban developed land within the Greater Wasatch is 370 square miles during 1998. Based on trends from the 1997 Baseline, GOPB updated the estimate to 389 square miles during 2000.

AGRC constructed a comprehensive inventory of land within the Greater Wasatch being used for agricultural purposes during 1998. The scale of the inventory is at 30 meter square gridcells, or about one-fifth acre. GOPB assumes this land is still agricultural unless it has been converted to urban development.

Based on population and employment density, land use is divided into two main categories:

1. Developed (more than one job or one person per acre)
2. Undeveloped (less than one job and less than one person per acre)

If a gridcell from the agricultural inventory falls into the undeveloped category, it is assumed to be agricultural. If the agricultural gridcell falls into the developed category, it is assumed the agricultural land was converted to an urban purpose.

Urban developed land is classed residential if it has more population than employment, and classed commercial if it has less population than employment.

The analytical framework is bifurcated between the urbanized area of Weber, Davis, Salt Lake and Utah Counties and the non-urbanized area of Box Elder, Juab, Morgan, Summit, Tooele, and Wasatch Counties.

Because of federal transportation planning requirements, and a general need for intensive planning, activity on land in the urbanized areas of Weber, Davis, Salt Lake and Utah Counties is better understood and measured than activity on land in the non-urbanized areas of Box Elder, Juab, Morgan, Summit, Tooele, and Wasatch Counties. This understanding and measurement takes form in what are known as Traffic Analysis Zones (TAZ), small areas designed for traffic analysis. There are over 1,300 TAZs in the urbanized area, some as small a downtown block, which is 10 acres. Each TAZ is designed to capture land use and traffic patterns specific to its area.

Activity on small areas is much less well understood and measured in the non-urbanized area. The Census gathers data within units known as blocks. GOPB has used population and acreage from the 2000 Census for over 10,000 blocks in the non-urbanized area as the base to establish land use.

Residential land use is divided into three classes:

1. Exurban
2. Suburban
3. Urban

Exurban development, often called rural residential or fringe suburban, is typically a transitional state as land is converted from rural low density agricultural purposes to urban purposes. Large exurban parcels have a mix of agricultural and residential development, with residential use more significant. As a starting point, a land parcel was defined as exurban if it had between 1 and 3 people per acre. Some parcels were classed exurban if the primary use was known to be residential, but the density was less than 1 person per acre. In the non-urbanized area, land was classed exurban in 2030 if it had between 0.25 and 1 person per acre. This change in criteria is necessary to account for the fact that the 2000 block geography is too sparse to capture changes in activity at small scales. If a large parcel is subdivided into five acre parcels over a period of years, with a mix of agriculture and residential, but residential predominating, the sparse geography requires a smaller density to accurately class the larger parcel as exurban. The TAZ, in contrast, are a finer geography, with more dense urban developed land, so a change in criteria is not necessary to capture changing activity.

Suburban development is the standard low to medium density residential environment in which most Americans live. As a starting point, a land parcel was defined suburban if it had between 3 and 10 people per acre. Since public right of way may consume 30% of the land in a parcel, when parcels have 10 people per acre, the upper limit of suburban development, there may be three or more homes per acre, but the lot size may be a

quarter acre or less. Because of the sparse block geography, a parcel in the non-urbanized area was classed suburban in 2030 if it had between 1 and 5 people per acre.

Urban development is the higher density residential areas in and around the urban core of large American cities. Urban development also occurs at smaller scale when people live in high density settings outside the urban core. As a starting point, a land parcel was defined as urban if it had between more than 10 people per acre. Including public right of way, when parcels have 10 people per acre, the lower limit of urban development, if the parcel has detached single family homes, the lot size may be as small as a fifth acre. Because of the sparse block geography, a parcel in the non-urbanized area was classed urban in 2030 if it had more than 5 people per acre.

Commercial land use is divided into two classes:

1. Dispersed
2. Concentrated

Commercial includes all non-residential urban uses such as retail stores, commercial centers, offices, warehouses, institutions, and the like. A commercial parcel may have a larger residential component, but its primary use is as an employment center.

Dispersed commercial development includes low density employment centers characteristic of trucking, warehousing and wholesale distribution operations. A parcel was classed dispersed if it had between 1 and 10 jobs per acre.

Concentrated commercial development includes higher density employment centers characteristic of office centers, hospitals, and shopping malls. A parcel was classed concentrated if it had more than 10 jobs per acre.

Land consumption was based on a time-varying algorithm relating the estimated land area in 2000 to population and employment density on a given parcel. The 389 square miles of urban developed land controlled the algorithm during 2000.

Land consumption was modeled for 2020 and 2030. An interpolation routine based on forecast population and trends from the 1997 baseline was used to estimate urban land development for the intervening years between 2000 and 2020 and between 2020 and 2030.

A density adjustment factor was created to capture the fact that recent trends in Greater Wasatch land development have been such that incremental urban land development is occurring at lower densities than exist for the developed area as a whole.

Major Issues and Findings

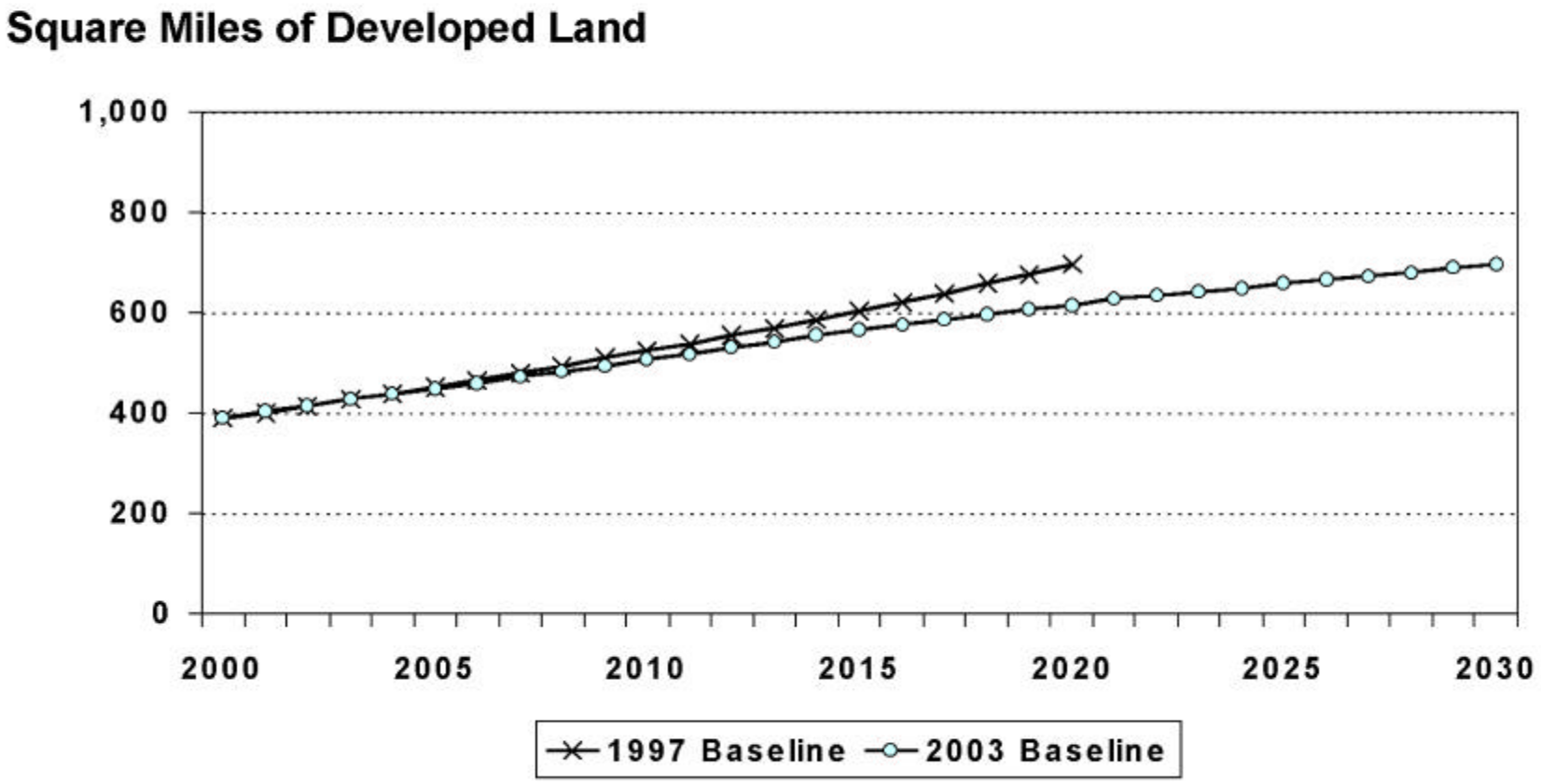
- Urban developed land in the Greater Wasatch will increase from 389 square miles in 2000 to 615 square miles in 2020 and to 697 square miles in 2030.

- Recent changes in transit, transit oriented development, and land conservation are expected to slow the pace of land consumption.

- The 1997 baseline, as modified by AGRC for the scenarios and strategy analysis, forecast land development of 695 square miles by 2020. Thus, the 2003 Baseline estimates the land consumption previously expected will be put off for a decade.

Urban Developed Land

Greater Wasatch Area

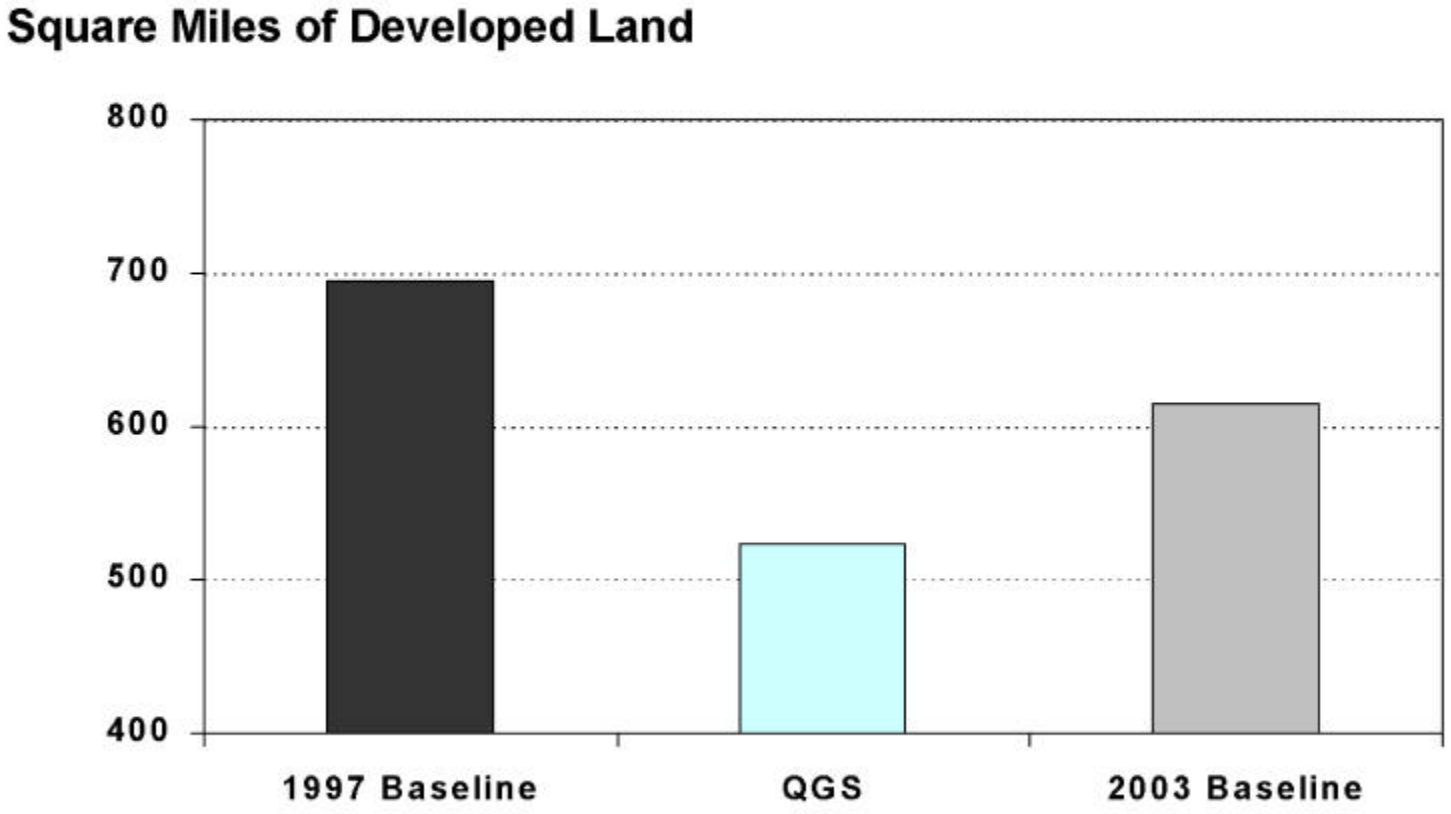


Note: QGS is the Quality Growth Strategy

Source: Governor's Office of Planning and Budget

2020 Urban Developed Land

Greater Wasatch Area



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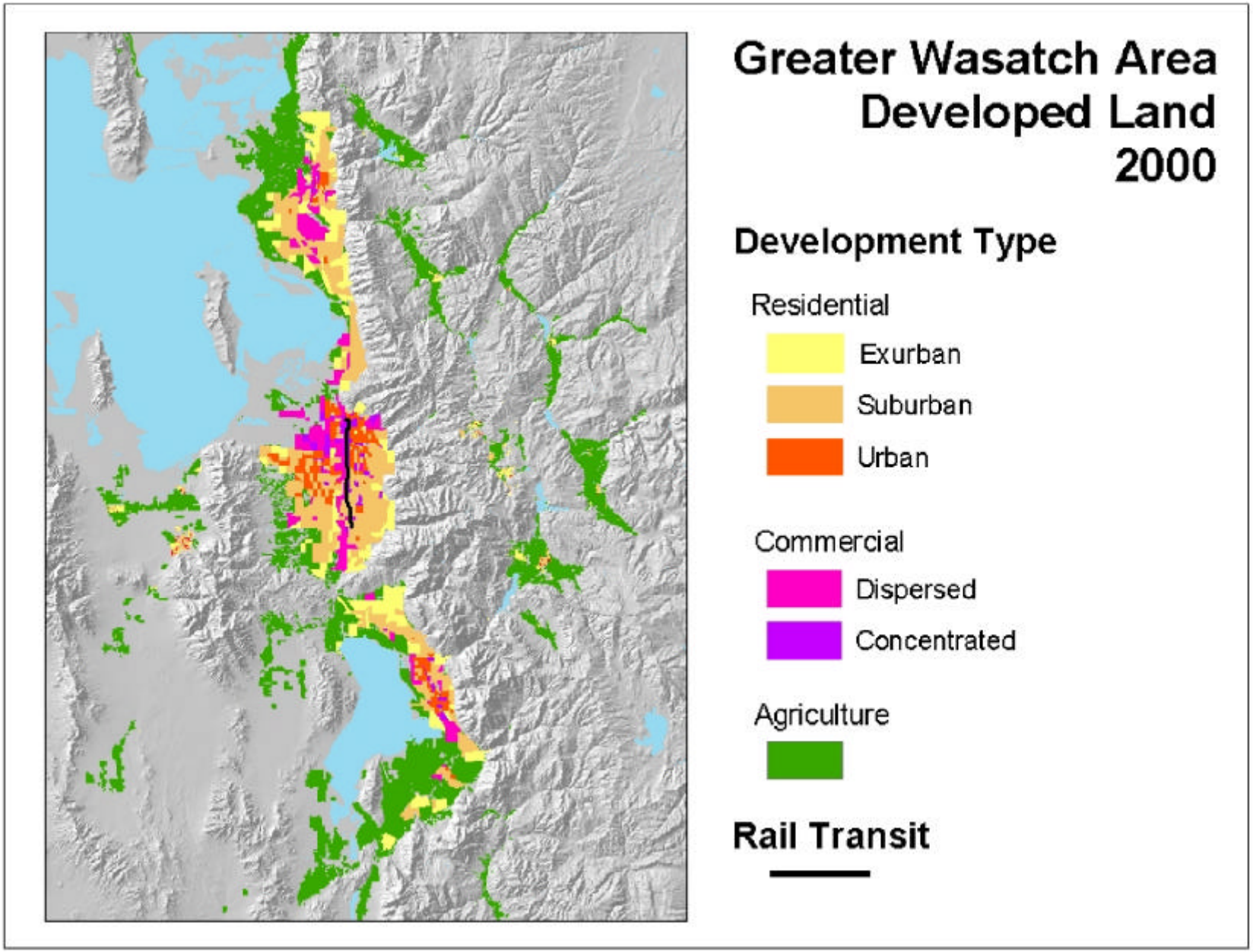
Source: Governor's Office of Planning and Budget



Source: Governor's Office of Planning and Budget

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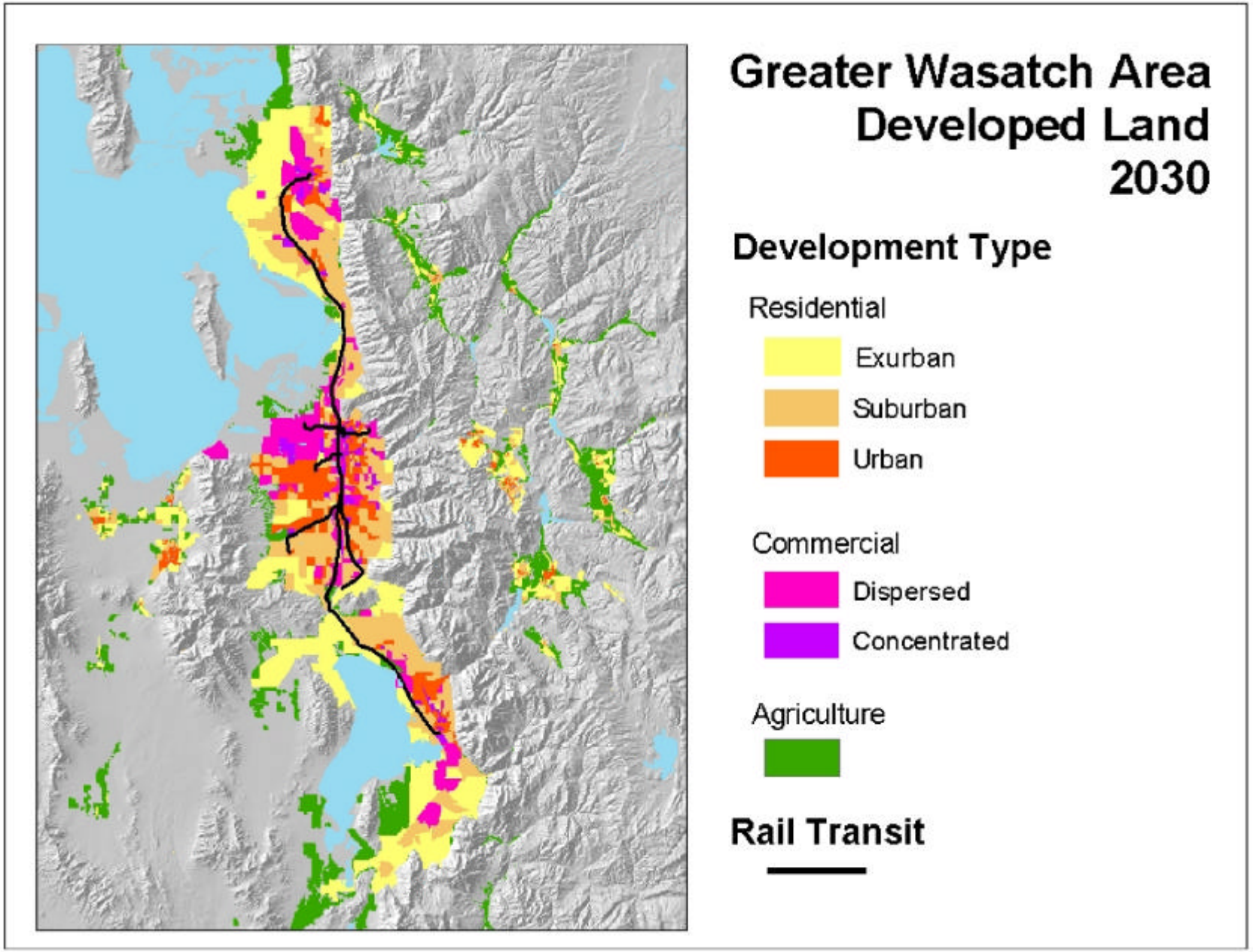

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